

**EFFECT OF COLLABORATIVE LEARNING STRATEGY ON ACADEMIC
ACHIEVEMENT IN CLOTHING MAINTAINANCE AMONG HOME
ECONOMICS EDUCATION UNDERGRADUATES IN EDO
AND ONDO STATE**

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**A PROJECT PROPOSAL PRESENTED TO THE DEPARTMENT OF HOME
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CHAPTER ONE

INTRODUCTION

Background to the Study

Home Economics Education is a multidisciplinary field dedicated to equipping individuals with the knowledge, skills, and attitudes necessary for effective family life and productive participation in the society. At the tertiary level, Home Economics programs prepare undergraduates for careers in education, entrepreneurship, and a range of service industries by fostering both intellectual understanding and vocational proficiency in various areas including clothing and textile. At its core, the discipline integrates theoretical principles with hands-on practice across domains such as Food and Nutrition, Family Living, Consumer Education, Housing, Child development, and Clothing and Textiles, amongst others. Clothing and Textiles, in particular, encompasses garment construction, fashion design, textile science, and clothing maintenance all of which contribute to self-reliance, sustainable living, and economic empowerment among youths and women (UNESCO, 2020).

Clothing is one of the basic necessities of man. It includes a great range of materials that are worn to protect and adorn the body, as well as enhancement of appearance, modesty, role identity, attraction, social status and traditional identity. When clothes are selected to meet the wearer's psychological, sociological, cultural, and physical needs, they are subjected to constant care and maintenance. No matter how appropriate the clothing may be, maintenance cannot be underestimated. For clothing to perform its functions, it must be properly maintained. Clothing maintenance refers to the systematic care and upkeep of garments or keeping clothing made up of more than fibres and textile materials worn on the body in good condition to extend the shelf life (Kingsley & Agbo, 2018). This can be achieved through

practices such as washing, ironing, stain removal, mending, and proper storage. Mastery of these practices not only preserves the quality and appearance of clothing but also promotes hygiene, resourcefulness, and cost-effectiveness in everyday living (Pam, 2024). In Edo State, Nigeria, the ability to maintain clothing effectively has become both a vital life skill and a potential avenue for income generation, as demand for garment care services continues to rise (Azonuche, 2020). Consequently, ensuring that undergraduates acquire robust competencies in clothing maintenance is central to achieving the broader aims of Home Economics Education.

To effectively master these clothing maintenance practices, students require not only theoretical knowledge but also practical and experiential learning opportunities. However, research indicates that traditional teaching methods often limit students' engagement and practical skill acquisition in Home Economics Education, particularly in Clothing Maintenance (Onyebuchi & Igbokwe, 2024). Students often struggle to translate this know-

ledge into competent practical application (Uzoigwe & Eze, 2022). This theory-practice gap suggests that prevailing instructional methods predominantly conventional, teacher-centered approaches seem not to have adequately supported the development of psychomotor skills or foster the critical thinking and problem-solving abilities required in vocational subjects (Afolabi, 2021; Ojo, 2019). In conventional "chalk-and-talk" settings, learners tend to adopt passive roles, with limited opportunities for hands-on experimentation or peer interaction, thereby constraining both skill acquisition and learning motivation. Studies have shown that students tend to perform better academically who engage in active, peer-supported learning environments such as self-regulated learning, peer teaching, Problem-Based Learning (PBL), jigsaw, Team-Based Learning (TBL) and Collaborative learning

(Adeyemi & Okoro, 2023). Thus learning strategy such as collaborative learning strategy need to be employed to help improve learning outcome in clothing maintenance.

Collaborative learning strategy refers to an instructional approach that involves students working together in small, structured groups towards achieving shared common academic goal. The students are responsible for one another's learning as well as their own. Thus, the success of one student helps other students to be successful (Slavin in Kulo 2021). Collaborative teaching has been linked to higher levels of engagement, improved problem-solving skills, and better retention of knowledge (Chen, Gam, & Stanley, 2024). It influences one's vocational career after education and particularly in clothing maintenance essential for skill development and enhance academic achievement of students. . According to Okafor and Edeh (2022), collaborative learning fosters critical thinking, enhances problem-solving skills, and promotes social competence among learners. It has become increasingly vital in educational systems aiming to produce innovative, independent, and cooperative learners. Grounded in social constructivist theory (Vygotsky, 1978), collaborative learning shifts the instructional focus from teacher transmission to student-centered engagement, where learners co-construct knowledge through structured group activities. Collaborative learning cannot be applied through verbal instruction only. It emphasizes mutual engagement, responsibility, and the collective construction of knowledge through dialogue, problem-solving, and peer-to-peer teaching. This strategy departs from traditional teacher-centered instruction by promoting active student involvement, interpersonal communication, and higher-order thinking.

In collaborative classrooms, where every student learns from everyone else, no student is deprived of the opportunity for making contributions and appreciating the contributions of others, by improving their classroom participation and critical thinking thereby helping them to retain knowledge required. Each member of the group reaches his goal only if all the other members reach their own learning goals. Techniques such as Think-Pair-Share, Jigsaw, Peer Tutoring, Problem-Based Learning (PBL), and Team-Based Learning (TBL) encourage students to share responsibility, articulate ideas, and solve real-world tasks collectively (Johnson & Johnson, 2019; Slavin, 2018). It is important to recognize that collaborative learning is not simply placing students in groups and assigning a task. Its successful implementation relies on careful planning, structuring of activities, and active facilitation by the instructor to ensure these principles are operationalized. When implemented effectively, collaborative learning leverages the power of social interaction and diverse perspectives to foster deeper learning and skill development. When applied to clothing maintenance, these strategies enable undergraduates to collaborate on tasks such as ironing, stain removal, mending thereby deepening their practical skills, reinforcing theoretical concepts, and building confidence through peer feedback and support and academic achievement. To foster and improve students' academic achievement, it is important to implement appropriate learning methods and strategies. Effective teaching strategies can capture students' attention, stimulate their curiosity, and make learning more engaging and meaningful (Onu, Anyaegbunam, and Uzoigwe, 2020). Therefore, there is the need to search for Innovative instructional methods like collaborative learning style that will add meaningful learning and evolve high academic achievement among students in clothing maintenance.

Achievement is a multifaceted concept that serves as an assessment of student's mastery of specific abilities at the culmination of teaching and learning activities. Academic achievement refers to a learner's ability to meet or exceed expected educational outcomes in both theoretical and practical domains. Academic achievement often used interchangeably with academic performance encompasses the knowledge, skills, and competencies that learners acquire and demonstrate in educational settings. According to Olaitan and Nwoke (2010), academic performance refers to the knowledge and skills attained by a student in school subjects, as designated by scores obtained on standardized instruments. It involves evaluating the level of attainment in individual tasks, courses, or programs to which individuals have been adequately exposed. A test, in this regard, is designed to elicit specific, desired responses, and the resulting scores represent the learner's mastery of the content. Academic achievement research is not only a gauge of student learning but also a catalyst for continuous improvement in teaching, curriculum design, and learner development. When individual test scores are aggregated, they provide a quantitative indicator of overall competence, enabling educators to ascertain whether a student's ability is high or low. A student whose academic achievement is high or impressive in a particular subject, and in clothing maintenance, is rightly assumed to be of high level ability. According to Moore, Herzog and Perkins (2022), teachers apply learner centered strategies to encourage and motivate learners to view a task as what they can commonly solve thereby gaining experience that contributes to their academic performance. Students' academic achievement can be influenced by various factors, including gender.

Gender is another factor that could influence academic achievement as an educational outcome due to the society disposition towards the learner based on sex

which results to gender inequality. The term refers to attributes associated with being male or female. Gender is one of the variables that have been related to differences found in interest and academic achievement. Ukwueze in Agim (2016) is of the opinion that the instructional method used in the classroom has a way of either positively or negatively influencing students' gender and their academic achievements. Some studies suggest significant gender differences exist in academic performance, often highlighting female students outperforming their male counterparts in subjects that require verbal abilities, memorization, and practical organization, while males sometimes excel in areas requiring spatial reasoning, analytical thinking, and problem-solving skills (OECD, 2022).). Conversely, learner-centered and interactive approaches, such as collaborative learning, are suggested to provide more equitable opportunities, enabling both genders to engage actively and benefit from peer interactions and mutual support (Oyarole & Bello, 2022). While gender plays a critical role, another essential factor that shapes students' academic outcomes is age.

Age is a significant determinant of students' learning experiences and achievement. As learners mature, they develop enhanced cognitive skills, emotional regulation, and study habits, all of which contribute positively to academic performance. Older students generally demonstrate greater self-discipline, longer attention spans, and more consistent learning behaviors compared to their younger peers (Adams & Burnett, 2021). These developmental differences also influence how students respond to instructional strategies. For instance, collaborative learning, which relies on effective communication and peer interaction, may be more suitable for older students who possess the social maturity needed for group cooperation. Therefore, understanding age-related learning characteristics is crucial in selecting teaching methods that are developmentally appropriate and effective. Beyond age,

socio-economic status may complicate students' academic outcomes and access to learning opportunities.

Socio-economic status (SES) has consistently been identified as a major contributor to academic disparities among students. Those from high Socio-economic status SES backgrounds are more likely to have access to academic resources, a supportive home environment, and additional learning opportunities that foster academic success (Eamon, 2022). In contrast, students from low Socio-economic status SES households often experience challenges such as inadequate school supplies, food insecurity, and less parental involvement in their education, which may negatively impact their learning outcomes (Sirin, 2024). However, inclusive instructional strategies like collaborative learning can help mitigate some of these disadvantages. By fostering peer engagement and shared responsibility, such methods reduce learning gaps and provide all students regardless of background with a chance to thrive academically (Oyarole & Bello, 2022). Thus, when gender, age, and socio-economic status are considered together, they emphasize the need for instructional approaches that are inclusive, responsive, and equity-driven in order to maximize academic achievement for all learners.

Given the growing need for effective instructional strategies in clothing maintenance, this study seeks to examine the effect of collaborative learning strategy in enhancing students' comprehension, practical skills proficiency, and overall performance in clothing maintenance among Home Economics Education undergraduates in Nigeria.

Statement of the Problem

Home Economics students, by the nature of their discipline, are expected to graduate with strong practical competencies that ensure their adaptability and efficiency in the world of work. Students in Home Economics Education programs often learn best through hands-on experiences, collaborative engagements, and real-world applications. Ideally, they should be able to carry out clothing maintenance tasks such as sewing, garment care, laundering, mending, and fabric handling with ease and creativity, equipping them for employability, self-reliance, and entrepreneurship in the fashion and textile industry. However, the prevalent use of conventional instructional methods does not fully support these learning needs. Consequently, students graduate with limited practical abilities, affecting their employability and entrepreneurial prospects.

However, in many Nigerian Universities, particularly within Colleges of Education and Faculties of Vocational and Technical Education, the academic achievement of Home Economics undergraduates in clothing maintenance is far below expectation. Many undergraduate students struggle with translating theoretical knowledge into practical competence. They often encounter difficulties in understanding and applying basic clothing/ fabric care techniques, demonstrating poor practical skills, low retention of procedures, and an inability to carry out garment repairs, applying laundering techniques, and managing garment storage effectively.

Despite these efforts, the dominant instructional approach has remained largely conventional, relying heavily on lecture-based, teacher-centred methods with minimal opportunities for students to actively engage, collaborate, or learn by doing. Many students continue to graduate with limited practical competence, outsourcing

assignments, lacking confidence in performing essential tasks, and showing little readiness for the demands of the workplace or entrepreneurial ventures. Limited resources, poorly equipped laboratories, large class sizes, and time constraints further exacerbate the situation. Hence Students face reduced employability and entrepreneurial opportunities due to inadequate practical skills. Their inability to perform essential clothing maintenance tasks limits their adaptability and competitiveness in the labour market. For institutions, this shortfall undermines the purpose of Home Economics Education, while for society. There is growing evidence that collaborative learning strategies, which encourage structured peer interaction, shared responsibility, cooperative problem-solving, and experiential learning, can significantly enhance learning outcomes in other disciplines.

It is because of all these concerns that this study seeks to investigate the effect of collaborative learning on the academic achievement of undergraduate Home Economics students in clothing maintenance in Edo State and Ondo State, Nigeria with the aim of providing insights that could inform more effective teaching practices and contribute to producing graduates who are practically competent, self-reliant, and ready for the world of work.

Purpose of the Study

The main purpose of this study is to determine the effect of collaborative learning strategy on academic achievement in clothing maintenance among Home Economics Education undergraduates in Edo and Ondo State. Specifically, the study seeks to determine:

1. the mean pretest and post-test academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy.

2. the mean pretest and post-test academic achievement scores of students taught Clothing Maintenance using the Conventional Lecture Method.
3. the difference in the pre-test and post-test achievement scores of students exposed to Clothing Maintenance using the Collaborative Learning strategy.
4. the posttest achievement scores of students taught using the Collaborative Learning strategy and those taught using the conventional lecture method.
5. the interaction effect of treatment and sex on the achievement scores of students in Clothing Maintenance.
6. the interaction effect of treatment and age on the achievement scores of students in Clothing Maintenance.
7. the interaction effect of treatment and socio-economic status on the achievement scores of students in Clothing Maintenance.
8. the difference in posttest achievement scores of male and female students exposed to the Collaborative Learning strategy.

Research Questions

The following research questions were formulated to guide this study

1. What are the mean pretest and posttest achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy among home economics undergraduate in Edo and Ondo State?
2. What are the mean pretest and posttest achievement scores of students taught Clothing Maintenance using the Conventional Lecture Method among home economics undergraduate in Edo and Ondo State?

3. What is the difference in the pretest and posttest achievement scores of students exposed to Clothing Maintenance using the Collaborative Learning among Home Economics undergraduate in Edo and Ondo State?
4. What is the difference in the posttest achievement scores of students exposed to Clothing Maintenance using the Collaborative Learning strategy and the conventional lecture method among Home Economics undergraduate in Edo and Ondo State?
5. What is the interaction effect of treatment by sex in the achievement scores of clothing maintenance among Home Economics undergraduate in Edo and Ondo State?
6. What is the interaction effect of treatment by age in the achievement scores of clothing maintenance among Home Economics undergraduate in Edo and Ondo State?
7. What is the interaction effect of treatment by socio-economic status in the achievement scores of clothing maintenance among Home Economics undergraduate in Edo and Ondo State?
8. What is the difference in the posttest achievement scores of male and female students exposed to Clothing Maintenance using the Collaborative Learning strategy among Home Economics undergraduate in Edo and Ondo State?

Hypotheses

The following null hypotheses will guide the study and will be tested at 0.05 level of significance:

1. There is no significant difference between the mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy in Edo and Ondo State.

2. There is no significant difference between the mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Conventional Lecture Method in Edo and Ondo State.
3. There is no significant difference between the pretest and posttest achievement scores of students exposed to Clothing Maintenance using the Collaborative Learning strategy among Home Economics undergraduates in Edo and Ondo State.
4. There is no significant difference in the posttest achievement scores of students exposed to Clothing Maintenance using the Collaborative Learning strategy and those taught using the conventional lecture method among Home Economics undergraduates in Edo and Ondo State.
5. There is no significant interaction effect of treatment and sex on the achievement scores of students in Clothing Maintenance among Home Economics undergraduates in Edo and Ondo State.
6. There is no significant interaction effect of treatment and age on the achievement scores of students in Clothing Maintenance among Home Economics undergraduates in Edo and Ondo State.
7. There is no significant interaction effect of treatment and socio-economic status on the achievement scores of students in Clothing Maintenance among Home Economics undergraduates in Edo and Ondo State.
8. There is no significant difference in the posttest achievement scores of male and female students exposed to Clothing Maintenance using the Collaborative Learning strategy among Home Economics undergraduates in Edo and Ondo State

Significance of the Study

The findings of this study would hopefully be of significance to the following stakeholders: Students, Educators, Curriculum Developers, Policymakers, Employers of Labour, Scholars and Researchers, Parents, Counselors, and Educational Administrators, if published in scholarly journals, presented in conferences, seminars, or uploaded on the internet, it would reach a broader audience interested in educational improvement and skill development.

Students would gain valuable, deeper understanding and practical mastery practical skills through interactive learning experiences that foster teamwork, problem-solving, creativity, and technical competence self-reliance in garment care. By participating in collaborative activities, students would enhance their abilities in critical areas of Clothing Maintenance such as Laundry Processes, Application of Laundry Agents, Interpretation of Fibre Types and Care Labels, Stain Removal Procedures, Simple Garment Repairs (Darning and Patching), and Care and Storage of Special Garments. These are essential life and career skills that would not only boost their academic performance but also prepare them for the 21st-century workforce, particularly in the fashion and textile industries.

Educators and instructors would benefit from this study as it provides empirical evidence on the effectiveness of collaborative learning methods in improving practical skills and academic achievement. It would guide teachers in adopting more effective instructional strategies that promote student engagement, cooperative problem-solving, and practical skill acquisition, especially in technical subjects like Clothing Maintenance by refining their instructional techniques for topics such as Laundry Techniques, Stain Management, and Garment Care, making

lessons more interactive, skills-driven, and student-centered. This would enhance student engagement and outcomes in Clothing Maintenance courses.

Curriculum developers would gain critical insights from this study, which would guide the design of more student-centered curricula that incorporate collaborative learning approaches for vocational and skill-based courses in Home Economics Education. Through findings from this study, developers can structure programs to include practical competencies like fabric analysis, laundry agent application, clothing repair, and special garment care, thereby ensuring that students graduate with hands-on, industry-relevant skills. Curricula would become more engaging, responsive to industry demands, and practical.

The evidence generated can inform policy decisions that encourage the integration of collaborative teaching methods into teaching and learning frameworks, particularly for practical courses at the tertiary education level by strengthening vocational and technical education. Recognizing the importance of skill-based competencies in areas such as garment maintenance and textile management, policymakers could allocate resources and support strategies that prioritize practical training and collaborative instruction methods, ultimately promoting national economic development through skill acquisition.

Employers of labour in the fashion, laundry, hospitality, and textile sectors would benefit from having access to graduates with proven skills stronger practical competencies in special garment care, efficient laundry processes, fabric care, and minor garment repairs. Such competencies are increasingly demanded in industries where precision, professionalism, and textile expertise are crucial. Collaborative learning ensures that graduates are workplace-ready and possess strong interpersonal and problem-solving skills.

Scholars and researchers would find this study a valuable contribution to academic literature on collaborative learning, vocational education, and practical skill acquisition. It would provide a foundation for further research on innovative teaching methodologies in Clothing Maintenance, Home Economics, and technical education fields, encouraging evidence-based educational reforms.

Parents and counselors would become more aware of the value of Home Economics Education and its career opportunities. They would be empowered to guide students towards subject choices that promote entrepreneurial skills and self-reliance. Educational administrators would also be encouraged to adopt collaborative learning frameworks across institutions, improving instructional delivery, enhancing student practical skills, and fostering stronger career readiness among graduates.

The findings of this study would also be disseminated through academic journals, conference proceedings, educational seminars, and online platforms for broader reach and impact. Publishing the research would provide educators, scholars, and policymakers with critical insights into best practices for skill-oriented, collaborative learning in vocational education.

This study bridges the gap between theoretical instruction and practical skill acquisition in Clothing Maintenance education. By demonstrating how collaborative learning enhances technical proficiencies such as laundry techniques, stain removal, garment repair, fabric care interpretation, and special clothing storage the study enriches knowledge on effective vocational teaching methods. It offers a model for redesigning Home Economics Education to meet modern industry needs, thus strengthening vocational training, promoting skill acquisition, and enhancing employability among Nigerian graduates.

The completed work will be published in national and international journals, making it accessible to researchers, educators, and policymakers globally.

Scope and Delimitation of the Study

This study focused on determining the effect of Collaborative Learning Strategy on the academic achievement in Clothing Maintenance among undergraduate students of Home Economics Education in Edo and Ondo State. The scope of the study will cover Clothing Maintenance (EHO 217) topics structured into six key areas drawn from the existing CCMAS Core Curriculum Maximum Academic Standard. With School scheme of work, including: Introduction to Clothing Maintenance and Laundry Processes, Laundry Agents and Application Techniques, Fibre Types and Interpretation of Care Labels , Stain Removal Procedures, Simple Garment Repairs, Care of Special Garments and Clothing .These topics will be taught using both the Collaborative Learning Strategy (for the experimental group) and the Conventional Lecture Method (for the control group). The study will be delimited to all 200 level full-time undergraduate students taking Clothing Maintenance (EHO 217) in University of Benin, Edo State and Adeyemi Federal University of Education, Ondo State.

Definition of Terms

The following terms are operationally defined as used in this study:

- **Academic Achievement:** Refers to the measurable learning outcomes performance in both theoretical and practical tasks based on students' performance scores in the Clothing Maintenance Achievement Test (CMAT) assessed through pretest and posttest
- **Clothing Maintenance:** Refers to the systematic care, cleaning, repair, and storage of garments to prolong their life span, enhance their appearance, and

maintain their functional quality. In this study, it includes activities such as laundering, stain removal, ironing, mending, and proper storage techniques.

- **Collaborative Learning Strategy:** Refers Instructional approach involving small groups of students working together to achieve educational goals. It involves discussion, teamwork, and peer teaching, guided by the instructor, aimed at enhancing understanding and practical skill development.
- **Conventional Lecture Method:** Refers to a traditional teacher-centered instructional method characterized by direct transmission of information from teacher to students, with minimal student interaction or hands-on engagement.
- **Gender:** Refers to the classification of students based on biological sex (male or female) as used in analyzing potential differences in academic achievement under different instructional strategies.
- **Home Economics Education:** Refers to Students enrolled in Home Economics education programs at tertiary institutions in Edo State.
- **Interaction Effect:** Refers to the combined influence of the teaching method (collaborative or conventional) and gender on students' academic achievement, beyond the independent effects of either variable alone.
- **Undergraduates:** Refers to students pursuing a first degree (Bachelor's) in Home Economics Education, specifically those enrolled at 200-level in selected universities in Edo State during the 2024/2025 academic session

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter contains a review of existing literature related to this study organized under the following subheadings

- Theoretical Framework
- Concept of Home Economics Education in University Education in Nigeria
- Gender Issues in Home Economics Education and Students Academic Achievements
- Concept of Teaching Method ,Conventional Teaching Method
- Concept of Collaborative Learning Strategy
- Collaborative Learning Strategy and Students' Academic Achievement
- Concept of Clothing Maintenance
- Gender and Academic Achievement
- Age and Students' Academic Achievements
- Socio-Economic Status and Students' Academic Achievements
- Review of Related Empirical Studies
- Summary of Reviewed Literature

Theoretical Framework

This study is hinged on Social Constructivist Theory (Vygotsky, 1978)

Lev Vygotsky (Vygotsky, 1978) developed his social constructivist theory in the early 20th-century Soviet context, drawing on the intellectual climate of post-revolutionary Russia. Social Constructivist Theory, developed by Lev Vygotsky, conceptualizes learning as a fundamentally social, interactive, and culturally embedded process (Vygotsky, 1978). Social constructivism states that knowledge

develops from how people interact with others in their immediate environment, in their culture, and with society at large. Accordingly, every conversation that happens between people carries the possibility for each participant to gain new knowledge or expand their existing knowledge. It asserts that cognitive development is not an isolated individual activity but is facilitated through meaningful social interactions within culturally relevant environments. This perspective departs from traditional, transmission-based models of learning by emphasizing the co-construction of knowledge through dialogue, collaboration, and guided participation.

Vygotsky's central insight was that knowledge is co-constructed through social interaction. Cognitive development, he proposed, occurs first between people (interpsychologically) and only later within the individual (intrapsychologically) as the knowledge gets internalized. In other words, meaningful learning happens through engagement with others parents, teachers, peers rather than in isolation. Through collaborative activities like dialogue and play, children encounter new ideas and strategies, which they gradually internalize as their own thinking processes. This contrasts with theories that treat learning as a solitary exploration; Vygotsky saw interaction and culture as indispensable in shaping the mind . Each learner grows into the "intellectual life" of those around them.

The foundational constructs of Vygotsky's theory includes:

1. Internalization
2. Zone of Proximal Development (ZPD)
3. More Knowledgeable Others (MKO)
4. Scaffolding (view of knowledge and view of motivation)

Vygotsky's concept of internalization whereby external social dialogues become internal cognitive processes. Modern studies emphasize how social

interaction, particularly through language-rich contexts, shapes learners' self-regulation and inner speech (McLeod, 2024). External social activities and dialogues become internal mental functions. Learning begins on a social plane (interaction with others) and is later internalized as personal understanding.

The Zone of Proximal Development (ZPD) is defined as the range of tasks a learner cannot yet do alone but can accomplish with guidance from a more knowledgeable other. In practical terms, it's the gap between current ability and potential development. Vygotsky believed instruction is most effective when it targets this zone challenging the learner just beyond their independent level and providing support to bridge the gap. Successful social interaction within the ZPD "boosts" the child's development. For example, an adult or more skilled peer might assist a child in solving a puzzle by prompting and hinting; through this supported attempt, the child learns skills that they can later use independently. The notion that learning leads development (rather than simply reflecting it) is a hallmark of Vygotsky's theory, and the ZPD illustrates how social support catalyzes growth.

Learning in the ZPD typically involves a more knowledgeable other (MKO) someone (a teacher, parent, or peer) who has a better understanding or higher ability level in regard to a task or concept. MKOs provide the guidance, feedback, and modeling necessary for learners to make progress within their ZPDs, thereby enhancing the learning process. The MKO's role is to provide scaffolding, a term later coined by Wood, Bruner, and Ross (1976) to describe the tailored support given to a learner to help them achieve a task within their ZPD. Vygotsky described how an expert can structure a task and assist a novice step by step. This support (scaffold) is gradually reduced as learners gain mastery and confidence.

Vygotsky's scaffolding is a theory that focuses on a student's ability to learn information through the help of a more informed individual. When used effectively, scaffolding can help a student learn content they wouldn't have been able to process on their own. This techniques include guided demonstrations, questioning, prompting, and peer mentoring, all of which help students achieve goals they might not reach independently. This dynamic support process allows the learner to perform more complex tasks than they could manage alone, and it fosters independence as they internalize the strategies. The concept of scaffolding has become a practical cornerstone in education (e.g. guided practice, tutoring systems) directly inspired by Vygotskian theory.

Strengths of Social Constructivist Theory

One of the major strengths of the Social Constructivist Theory is its emphasis on active learning. Vygotsky's framework shifts learners from passive recipients of knowledge to active participants in the learning process. Students engage through hands-on tasks, discussion, and problem-solving, which fosters deeper understanding. This approach aligns well with practical disciplines such as clothing maintenance, where skills are best learned by doing (Powell & Kalina, 2019; Vygotsky, 1978). Another strength is the promotion of peer interaction. The theory supports the idea that knowledge is co-constructed through social engagement. By interacting with peers, learners develop communication, cooperation, and teamwork skills, which are not only vital for learning but also for functioning in broader social and professional settings (Palincsar, 2019).

Additionally, the theory offers adaptability to diverse learners. Through scaffolded instruction and collaborative learning, teachers can tailor support to individual student needs. The Zone of Proximal Development (ZPD) allows learners

to progress with the help of more knowledgeable peers or instructors, accommodating a range of abilities within the classroom (Woolfolk, 2019).

The theory also promotes higher-order thinking skills. Students are encouraged to think critically, make connections, and apply concepts to real-life contexts. These cognitive demands stimulate the development of analysis, synthesis, and evaluation abilities, which are essential for academic success and lifelong learning (Jonassen 2021).

Weaknesses and Criticisms of Social Constructivist Theory

Despite the many benefits of social constructivist methods in education, several criticisms and limitations affect their overall effectiveness, particularly in diverse classroom settings. One major concern lies in the area of individual differences and learning styles. While the theory emphasizes collaboration and peer interaction, not all students thrive in such environments. Learners who prefer structured, independent study or explicit instruction may feel uncomfortable or disengaged. One notable challenge is its dependence on group dynamics. The effectiveness of collaborative learning heavily relies on the quality of peer interactions. If group members lack cooperation or experience interpersonal conflicts, the learning process may be hindered, and some students may not benefit fully (Slavin, 2021). The theory is also known for its high resource demand. Implementing constructivist strategies requires significant preparation, instructional time, and teacher expertise. In under-resourced settings, educators may find it difficult to provide the individualized scaffolding and facilitation needed to support collaborative learning effectively (Kirschner, Sweller, & Clark, 2020). Another weakness is the potential for unequal participation. In group tasks, some learners may dominate the activity while others remain passive. This imbalance can reduce the learning benefits

for quieter or less confident students and make it difficult to ensure equitable learning outcomes (Gillies, 2024).

Finally, the theory presents assessment challenges. Since learning is co-constructed in group settings, it is often difficult to evaluate individual student progress objectively. Teachers may struggle to differentiate between what a learner has mastered independently and what was achieved with assistance, making accurate assessment complex (Johnson & Johnson, 2021)

Application of Social Constructivist Theory to the Current Study

The application of Vygotsky's Social Constructivist Theory to the current study examining the effect of collaborative learning strategies on academic achievement in clothing maintenance among Home Economics undergraduates provides a theoretical foundation for understanding how students learn most effectively through socially mediated engagement. Vygotsky (1978) emphasized that knowledge is actively constructed through interaction with others within meaningful cultural and social contexts, rather than passively absorbed. Learning is viewed as a dynamic process where individuals co-construct understanding through dialogue, shared activities, and collaboration.

In the specific context of clothing maintenance education, this theory supports instructional strategies that involve learners working together to complete practical tasks such as washing, ironing, stain removal, mending, and proper garment storage. These learning experiences are situated within the Zone of Proximal Development (ZPD), which represents the range of tasks that students cannot yet perform independently but can accomplish with the guidance of a More Knowledgeable Other (MKO) (Vygotsky, 1978). Through scaffolding temporary support provided by instructor or peers students are gradually enabled to achieve mastery, ultimately

transferring responsibility to themselves as their competence grows (Raymond, 2020). The collaborative learning strategy aligns with Vygotsky's principle by structuring instructional activities that enable undergraduates to interact, assist one another, and co-construct knowledge in clothing maintenance.

The collaborative learning strategies embedded in the current study reflect key principles of Vygotsky's theory:

- **Peer Instruction:** Learners work in small groups to collaboratively explore and demonstrate clothing maintenance skills. They share techniques, clarify misconceptions, and offer feedback, enabling reciprocal learning and cognitive development through social interaction (Oyarole, 2019).
- **Project-Based Group Activities:** Students engage in team projects such as designing a weekly clothing care routine or restoring worn garments. These tasks require coordination, creativity, and practical problem-solving, all grounded in cooperative learning environments where knowledge is jointly constructed (Agim & Nwosu, 2024).
- **Guided Group Discussions:** Through structured group conversations, learners reflect on their experiences, articulate reasoning, and negotiate meaning. These discussions reinforce comprehension and encourage metacognitive awareness, supporting internalization of concepts first learned socially (Gull & Shehzad, 2021).

This theoretical perspective underpins the hypothesis that collaborative engagement in clothing maintenance activities enhances academic achievement. As students work within their ZPD and receive scaffolding from instructors and peers, they acquire competencies first through social processes, which are later internalized and applied independently. Thus, Vygotsky's theory offers a compelling rationale for

employing collaborative learning strategies in skill-based domains such as clothing maintenance

Traditional methods of teaching clothing maintenance often emphasize passive learning and individual performance, which may result in shallow understanding and limited skill retention. The integration of Social Constructivist Theory provides a progressive alternative by embedding learning in collaborative, scaffolded, and contextually relevant experiences. This study addresses a notable gap by empirically examining how structured, theory-informed collaboration enhances both academic achievement and practical skill acquisition. In doing so, it contributes to the evolving discourse on effective pedagogy in skill-based education, particularly within Home Economics in Edo and Ondo State

Concept of Home Economics Education in University Education in Nigeria

Home Economics Education occupies a unique and vital space within the Nigerian tertiary education landscape, offered in universities and colleges of education. Its philosophy centers on strengthening family life and improving the well-being of individuals by synthesizing and applying knowledge drawn from physical, biological, and social sciences, as well as the humanities. The programme is fundamentally practical and skill-oriented, designed to equip learners with competencies necessary for self-reliance, gainful employment, and effective home and family management. It encompasses diverse areas such as Foods and Nutrition, Clothing and Textiles, Home Management (including resource management and housing), and Child Development/Family Living.

National policies, including the National Policy on Education and various TVET frameworks, recognize the importance of Home Economics in providing essential pre-vocational and vocational skills. It is intended to contribute significantly to human

capital development by preparing individuals for various occupations and empowering them economically. Professional bodies, such as the Home Economics Professional Association of Nigeria (HEPAN), and associated academic journals like the Nigerian Journal of Home Economics (Nig-JHEC), play a role in advancing the field, discussing emergent issues, and promoting research and best practices. The discipline aims to be work-focused, skill-based, result-oriented, and increasingly, technology-driven.

Gender Issues in Home Economics Education and Students Academic Achievements

Home Economics education has historically been shaped by societal expectations surrounding gender roles, impacting participation rates and perceptions of the field. Gender, as defined by Anyakoha (2016), refers to the roles, responsibilities, and power dynamics assigned to individuals based on their societal positions. Unlike sex, which is biologically determined, gender is socially constructed, shaped by cultural, institutional, and social influences (Riley, 2020). These societal constructs have significant implications for educational fields, including Home Economics, which has traditionally been associated with women's roles in domesticity and caregiving (Smith & Williams, 2023). Traditionally, it was closely associated with women's education, reinforcing the notion that domestic and care giving responsibilities were primarily female domains (Osuala, 2019). Over time, however, the discipline has expanded to include broader subjects such as nutrition science, fashion technology, and hospitality management, offering diverse career opportunities for both men and women (UNESCO, 2021). Despite these advancements, gender disparities remain a pressing concern. Enrollment trends, career perceptions, curriculum structures, and societal norms continue to shape participation

in Home Economics education, often discouraging male students from engaging with the subject.

The roots of Home Economics as an academic discipline can be traced to the 19th and early 20th centuries when it was established primarily to equip women with essential domestic skills, including cooking, sewing, and childcare (Osuala, 2019). During this period, educational institutions structured their curricula in ways that reinforced gendered divisions, directing women toward Home Economics while encouraging men to pursue technical and engineering courses (Adebayo, 2021). This rigid separation of disciplines contributed to the perception that Home Economics was inherently a female-oriented subject, limiting male participation and reinforcing traditional gender roles.

In recent decades, efforts have been made to reposition Home Economics as a gender-inclusive discipline. Many institutions have broadened their curricula, integrating subjects such as entrepreneurship, food science, and textile technology to appeal to a more diverse student base (UNESCO, 2021). However, gender biases persist despite these changes. Male students who express interest in Home Economics often face stigma, as societal perceptions continue to frame it as a female-centric subject (Ogunleye & Adewuyi, 2020). Consequently, while the subject has evolved beyond its traditional domestic focus, deeply ingrained stereotypes still affect participation rates.

Although Home Economics now encompasses a wider range of vocational and technical subjects, enrollment statistics continue to highlight gender imbalances. Research indicates that in many educational institutions, Home Economics is still perceived as a "soft" discipline, more suited for female students, while male students are often encouraged to pursue STEM-related fields (Akinpelu, 2021). In Nigeria, for

example, more than 80% of Home Economics students in universities are female, with male enrollment remaining significantly low (Adebayo, 2021). A similar trend is observed in Ghana, where male participation in Home Economics programs at technical schools is below 15%, despite efforts to incorporate more technology-driven subjects such as food processing and textile engineering (Ampofo & Mensah, 2022). These enrollment patterns demonstrate how gender stereotypes continue to shape perceptions of the field, limiting male engagement.

The content and instructional approaches used in Home Economics education also contribute to gender disparities. Some curricula continue to reflect traditional gender roles, with textbooks and teaching materials portraying women primarily as homemakers and men as financial providers (Osuala, 2019). Akinpelu (2021) highlights that some course materials focus more on household management and childcare, reinforcing the perception that these are female responsibilities. Additionally, the predominance of female teachers in Home Economics classrooms may further discourage male students from enrolling, as the absence of male role models can make the subject appear less accessible to them (Adebayo, 2021). These factors collectively reinforce gendered stereotypes and contribute to the persistent gender gap in Home Economics education.

To address the gender disparity in Home Economics, awareness programs should be implemented to highlight the diverse career opportunities available in the field. Mentorship programs where successful male professionals in hospitality, nutrition, and fashion engage with students can help dispel misconceptions about the subject (Ogunleye & Adewuyi, 2020). Schools can also organize career fairs and media campaigns to showcase how Home Economics intersects with various industries, breaking the notion that it is solely a domestic discipline (Akinpelu, 2021).

The presence of male educators in Home Economics can help normalize male participation in the subject. Institutions should actively encourage men to specialize in Home Economics education by offering scholarships and professional development programs (Ampofo & Mensah, 2022). Highlighting male educators in recruitment campaigns can also challenge existing stereotypes and make the subject more appealing to male students.

Concept of Teaching Method

A teaching method is a set of principles and methods used by teachers to enable student learning. These strategies are determined partly by the subject matter to be taught, partly by the relative expertise of the learners, and partly by constraints caused by the learning environment. For a particular teaching method to be appropriate and efficient it has to take into account the learner, the nature of the subject matter, and the type of learning it is supposed to bring about.

Teaching methods, also referred to as instructional methods, encompass a variety of approaches that educators use to facilitate learning. Teaching is an art, and the effectiveness of a teacher lies in simplifying complex concepts to enhance student comprehension (Abdulrahman & Hassan, 2016). To ensure effective learning, it is crucial for teachers to select appropriate instructional strategies tailored to both the subject matter and the characteristics of the learners. The choice of teaching method plays a significant role in achieving the desired educational outcomes (Pilato & Ulrich, 2024).

The effectiveness of teaching and learning depends on the approaches, techniques, and strategies employed in instruction. A well-structured lesson is largely determined by the teaching method used, integrating appropriate instructional

materials to achieve the intended objectives. Teaching is a dynamic process that involves interaction between the teacher, the learner, and the learning environment.

Teaching methods can be broadly categorized into teacher-centered and learner-centered approaches (Jones & Harper, 2021).

1. Teacher-Centered Approach

In this approach, the teacher assumes the primary role as the authority figure, while students are considered passive recipients of knowledge. Information is often delivered through direct instruction, with the primary goal being assessment through tests and examinations. The teacher is responsible for explaining concepts, demonstrating processes, and guiding discussions (Yusuf, 2024). Although this method is widely used, it has been criticized for its emphasis on rote memorization and limited student engagement (Ngwoke, 2020). The lecture method, which involves one-way communication from the teacher to students, is a common example of this approach. While it allows for the efficient delivery of information, it often lacks interaction and does not actively promote critical thinking or problem-solving skills (Akpoghol, Samba & Asemave, 2021).

Criticisms of the teacher-centered approach include:

- Emphasis on the teacher's knowledge rather than student understanding.
- Limited student participation and engagement.
- Minimal interaction between teachers and students.
- Encouragement of rote memorization rather than deep learning.

Although this approach remains prevalent in many educational institutions, research suggests that it may not be the most effective way to foster long-term retention and understanding of concepts (Umar, Abdullahi & Hassan, 2019).

2. Learner-Centered Approach

The learner-centered approach, also known as an interactive or innovative teaching method, focuses on active student participation. It takes into account students' interests, strengths, and learning styles, fostering critical thinking, creativity, collaboration, and communication (Offorma & Obiefuna, 2017). This approach shifts the role of the teacher from an information provider to a facilitator of learning, creating a student-centered learning environment that encourages engagement, inquiry, and discovery (Walters, Green & Walters, 2017).

Learner-centered teaching methods include:

- **Discussion Method** – Encourages dialogue and exchange of ideas among students.
- **Project-Based Learning** – Involves hands-on activities and real-world problem-solving.
- **Inquiry-Based Learning** – Encourages students to explore and investigate topics independently.
- **Role-Playing and Simulations** – Helps students understand concepts through experiential learning.
- **Cooperative Learning** – Promotes teamwork and collaborative problem-solving.
- **Guided Discovery** – Encourages students to construct their own understanding with teacher support.
- **Experimentation/Laboratory Method** – Enhances learning through practical, hands-on experiences.

The Conventional Method (lecture method) in University Education

Traditional approach tends to focus on teacher-centered rather students-centered learning. Students are rarely involved in the teaching and learning process but to only pay attention to what the teacher is explaining. Many of traditional learning approach use grammar-translation and audio-lingual methods as the ingredients. Such teaching methods only focus on certain aspects of language without providing sufficient practice for the students to practice and deepen their understanding upon the material given. Most interaction taking place is limited to teacher-student interaction. Student-student interaction is rarely seen. Students are conditioned to be passive almost all the time. They only become recipients of the knowledge delivered by the teacher. There is no sufficient space given to discuss and enlarge their communicative competence.

Conventional teaching methods, which include Lecture, Discussion, and Demonstration, have been widely used in higher education for centuries. These methods have evolved over time, incorporating technological advancements and pedagogical innovations. However, they continue to be the foundation of university instruction, each with unique benefits and limitations. This literature review explores the effectiveness of these three conventional teaching methods, examining their impact on student engagement, knowledge retention, and skill development.

Lecture Method

The lecture method is one of the most commonly used teaching strategies in university education. It involves an instructor delivering content in a structured manner, often accompanied by visual aids such as slides, videos, or written notes. Lectures are designed to be efficient, allowing educators to cover a vast syllabus within a limited timeframe (Lim, 2024). A key advantage of lectures is that they

provide expert-driven learning, where students gain knowledge from experienced instructors. Additionally, lectures ensure standardization in instruction, allowing the same material to be delivered uniformly to all students, making it easier for universities to maintain academic consistency.

Despite these advantages, the lecture method has been criticized for promoting passive learning. Studies suggest that students who only attend lectures may struggle with low engagement and retention rates (Jancaríková & Loukotová, 2024). Since lectures are primarily teacher-centered, they limit student interaction, reducing opportunities for clarification and discussion. Furthermore, the cognitive overload that occurs when large amounts of information are presented in a short period can negatively affect students' ability to retain and apply knowledge. Critics argue that lectures follow a one-size-fits-all approach, failing to accommodate diverse learning styles, which may disadvantage students who prefer hands-on or discussion-based learning.

Discussion Method

The discussion method is an interactive teaching approach that involves open conversations between students and instructors. Unlike traditional lectures, discussions promote critical thinking and collaborative learning, enabling students to actively engage with the material. Research suggests that discussion-based learning improves student engagement and knowledge retention (Spence, 2024). One of its key advantages is its ability to enhance critical thinking skills, as students are encouraged to question concepts, explore different perspectives, and formulate their own conclusions. Additionally, discussions strengthen communication skills, as students learn to articulate their thoughts and listen to diverse viewpoints.

Empirical studies highlight the benefits of the discussion method in higher education. Kalolo & Yadav (2024) found that students who participated in structured classroom discussions performed better on assessments than those who only attended lectures. Their findings suggest that active participation fosters deeper learning and better problem-solving abilities. However, the discussion method also presents challenges. One major limitation is that it is time-consuming, meaning that instructors may not be able to cover as much material as they would in a lecture format. The method is also instructor-dependent, requiring skilled facilitators who can guide conversations effectively while ensuring that discussions remain focused and productive. Additionally, some students may dominate conversations, while others remain passive, leading to participation inequality. To address this, structured discussion techniques such as debates, Socratic questioning, or small-group discussions can be implemented to ensure balanced engagement.

Demonstration Method

The demonstration method is a practical, hands-on teaching strategy where instructors show students how to perform a specific task, process, or experiment. This method is widely used in disciplines that require practical application, such as science, engineering, and medical education (Kokoreva & Shurygina, 2024). Demonstrations allow students to visualize complex concepts, making them more tangible and relatable. Research indicates that learning through demonstration enhances conceptual understanding and skill development, as students are more likely to remember what they see in action rather than what they hear in lectures.

One of the significant advantages of the demonstration method is that it bridges the gap between theory and practice. When students observe real-world applications of academic concepts, they develop a deeper understanding of how

theoretical knowledge is applied in practical settings. Studies show that students who engage in hands-on demonstrations exhibit higher retention rates and improved problem-solving abilities compared to those who rely solely on textbook learning (Triacca & Pelizzari, 2024). However, the demonstration method is resource-intensive, requiring specialized equipment, laboratory setups, and instructor expertise. It also poses scalability challenges, as it is difficult to implement in large classrooms where all students may not have equal access to demonstrations. Additionally, demonstrations can be time-consuming, limiting the amount of content that can be covered within a given academic period. To optimize its effectiveness, educators often combine demonstrations with discussions or student participation, creating a blended learning environment where students can both observe and practice the skills being taught.

In the 21st century, education is evolving to meet the needs of a dynamic world. Traditional teaching methods, such as the lecture method, have been criticized for their inability to foster deep understanding and critical thinking. Despite this, many teachers continue to rely on conventional methods, leading to poor learning outcomes (Akkansa, 2017). Studies have shown that incorporating modern, interactive methods significantly improves student engagement and comprehension (Ogwu & Azor, 2019).

Concept of Collaborative Learning Strategy

Collaborative learning is an instructional approach where groups of students work together to solve a problem, complete a task, or create a product. In the 21st century, there has been a growing shift towards collaboration in teaching, learning, thinking, and working. Within education, collaborative practices are recognized as one of the most effective strategies for promoting successful learning outcomes

among a broad range of students. This shift has also led to a change in the traditional role of teachers, who in collaborative learning environments now serve more as facilitators than as sole sources of knowledge.

Xu, Zhang and Wang (2023) define collaborative learning as an instructional method where students work in groups toward a common goal, with success depending not on outperforming others, but on achieving success together. Their research found that cooperatively analyzing, synthesizing, and assessing problems led to considerable improvements in higher-level thinking abilities. This collaborative approach fosters an environment where students engage in critical thinking, problem-solving, and knowledge retention, benefiting from diverse perspectives and shared responsibilities.

Research by Qureshi (2023) further supports the benefits of collaborative learning, highlighting how social factors influence student engagement and academic achievement. Their structural equation modeling (SEM) analysis showed that social factors such as presence, interaction with teachers and peers, and the use of social media positively impact student involvement, leading to active collaborative learning and, consequently, improved academic performance.

Collaborative learning typically involves students of diverse abilities working together on assigned tasks, particularly in practical or hands-on subjects, while the teacher adopts a supportive, advisory role. Almulla (2020) demonstrated the effectiveness of project-based learning (PBL), a form of collaborative learning, in increasing student engagement. In a study involving 124 teachers who implemented PBL, it was found that student interest and engagement were significantly enhanced through collaborative, interdisciplinary, iterative, and authentic learning activities.

Similarly, Hiltz and Turoff (2017) emphasized that collaborative learning focuses on group effort, with students organized into groups of at least five members. In such settings, teachers act as facilitators by outlining learning objectives and procedures, after which students work collectively toward completing the tasks. Each group presents its findings to the entire class, fostering communication and critical thinking. Although tasks are performed collectively, every group member must actively participate, ensuring that each student remains fully engaged in the learning process. This learner-centered, activity-based strategy encourages "hands-on" and "minds-on" engagement, promoting deeper interaction with subject material rather than passive observation.

Jenkins and O'Connor (2021) further described collaborative learning as a method well-suited for addressing the diverse cognitive styles found among students. Collaborative learning strategies promote increased mental activity through emotional and relational memory connections, enhancing long-term knowledge retention. By working in groups, students explain skills and concepts to one another, thereby reinforcing their own understanding. This method benefits both field-dependent and field-independent learners, making it a versatile instructional strategy.

In contrast, conventional teaching methods, commonly used in many educational settings, are characterized by a one-way flow of information from the teacher to students. In this model, the teacher remains active while students often assume passive roles, limiting opportunities for critical thinking and active engagement. Beyond fostering academic achievement, collaborative learning also prepares students for teamwork and interdisciplinary collaboration skills essential in today's professional environments. Industries such as fashion, architecture, and healthcare increasingly rely on team-based projects requiring professionals from

diverse backgrounds to work together. Responding to this need, some tertiary institutions have incorporated collaborative learning models into their curricula. For example, in Kenya, fashion technology programs have adopted collaborative teaching approaches where instructors from garment construction, textile engineering, and business management co-teach courses, ensuring that students gain both creative and business competencies (Njoroge & Kamau, 2022).

Thus, collaborative learning not only supports students' academic success but also equips them with essential interpersonal and professional skills needed for success in their future careers

Principles of Collaborative Learning

Lin (2017) identified several key principles that underpin the practice of Collaborative Learning (CL), each contributing to its effectiveness in promoting student engagement, language development, and critical thinking.

1. **Providing More Opportunities for Language Practice;** One important principle is that CL offers students greater opportunities for language practice. When students work together toward a shared learning goal, they engage actively in discussion, negotiation, and idea-sharing, which naturally strengthens their language competencies. However, challenges may arise in groups where less proficient students outnumber more capable ones. In such cases, the teacher may need to temporarily adopt a more traditional, teacher-centered approach to clarify complex language points. This can, unfortunately, reduce the time students have for independent language practice. Moreover, highly capable students may struggle to find equally proficient peers with whom to practice meaningful conversation, limiting their opportunities for more advanced language use (Lin, 2017).

2. **Improving the Quality of Student Talk;** Another important principle is the improvement in the quality of student discourse. As Zang (2022) explained, in traditional English as a Foreign Language (EFL) classrooms, communication often occurs in artificial settings directed by the teacher. In contrast, CL fosters a more natural and socially authentic environment, encouraging students to use language in ways that reflect real-life communication. Through collaborative activities, students engage in requesting, clarifying, negotiating meaning, and adapting their speech to ensure understanding. This process not only increases the quantity of spoken language but also enhances the appropriateness and effectiveness of student interactions, helping learners subconsciously internalize correct language use.
3. **Creating a Positive Learning Climate;** CL also promotes a positive emotional and psychological learning environment. Lin (2017), emphasized that language learning is both an emotional and cognitive experience. A troubled psychological state can inhibit learning, while a supportive, relaxed atmosphere can enhance it. Collaborative classrooms reduce anxiety by allowing students to speak freely without fear of strict evaluation, unlike traditional methods where fear of making grammatical mistakes can stifle participation. A positive affective environment, therefore, enhances students' willingness to participate, deepens understanding, and supports academic achievement.
4. **Promoting Social Interaction;** Collaborative Learning naturally builds strong social interaction among students. By discussing and exchanging ideas in a supportive environment, students develop not only linguistic competence but also communication and interpersonal skills. (Jiang 2020) emphasized that

interaction during CL activities through discussion, questioning, responding, and organizing thoughts strengthens both language skills and social cohesion. The informal, student-driven nature of CL fosters deeper relationships among learners, which in turn further supports academic development.

5. **Encouraging Critical Thinking:** CL is particularly effective in fostering critical thinking. Compared to individual learning, collaborative environments challenge students to discuss, clarify, and evaluate each other's ideas critically. Lin (2017) highlighted that these processes naturally stimulate deeper thinking as students are exposed to diverse perspectives and are required to defend or reconsider their viewpoints. Johnston, James, Lye, and McDonald (2021) similarly argued that collaborative learning enhances critical thinking by engaging learners actively in problem-solving activities. The dynamic exchange of ideas in group settings encourages students to analyze issues more thoughtfully, promoting higher-order cognitive skills essential for academic success.

A variety of specific collaborative learning techniques can be effectively adapted to teach the practical skills involved in clothing maintenance. The selection of a particular strategy should ideally align with the complexity of the skill being taught and the specific learning objective. Some relevant strategies include:

- **Peer Instruction / Peer Learning:** Students work in pairs or small groups. One student might explain the steps for sewing a seam while the other performs the task, or pairs could diagnose fabric types based on tactile and visual cues, discussing their reasoning and find solutions to problems. This is suitable for reinforcing specific techniques or concepts. This approach encourages active participation and allows students to teach each other by

addressing misunderstandings and clarifying misconceptions. Research indicates that peer instruction can enhance student engagement and academic achievement by promoting reciprocal teaching and learning (Akinmoladun & Adewale, 2022).

- ***Think-Pair-Share:*** This simple technique provide students with opportunities to reflect individually, discuss with a partner, and share with the larger class, this technique encourages deeper processing and understanding of the material. Studies have shown that Think-Pair-Share can increase student engagement and improve learning outcomes (Okunrotifa & Olusanya, 2021). For example, students could individually brainstorm solutions for removing a specific stain, discuss their ideas with a partner, and then share the most promising methods with the instructor and peers. It encourages individual processing before collaborative refinement.
- ***Jigsaw:*** The Jigsaw method is a cooperative learning strategy where students are divided into small groups, each responsible for learning and teaching a segment of the material to their peers. This approach promotes active participation, fosters a sense of responsibility, and enhances understanding through teaching. Recent studies have found that the Jigsaw method is associated with higher levels of academic performance and student engagement compared to traditional small-group discussions (Afolabi & Omoniyi, 2021). The overall task (e.g., creating a comprehensive guide to laundering different delicate fabrics) is divided into sub-tasks (e.g., washing silk, washing wool, washing lace). Each member of a "home group" joins an "expert group" focused on one sub-task. After mastering their topic, they

return to their home group to teach their peers. This promotes deep learning of specific areas and interdependence.

- **Group Projects:** Students work in teams over a longer period to achieve a common goal. Collaborative projects involve students working together over an extended period to achieve a common goal. These projects encourage teamwork, problem-solving, and application of knowledge in real-world contexts. Research has highlighted that collaborative projects can lead to improved learning outcomes and provide students with valuable transferable skills (Ogunyemi & Aluko, 2020).
- **Simulations, Case Studies, and Role-Playing:** Groups can be presented with complex case studies (e.g., a garment with multiple types of damage requiring a multi-step repair plan), engage in simulations (e.g., using software or scenarios to practice wardrobe planning for different client needs), or role-play interactions (e.g., advising a customer on garment care, troubleshooting a laundry mishap). These methods excel at bridging theory and practice and developing higher-order thinking skills.

Simulations and role-playing activities provide students with opportunities to engage in realistic scenarios, allowing them to apply theoretical knowledge in practical situations. These methods promote critical thinking, decision-making, and collaboration. Studies have shown that simulations and role-playing can enhance student learning by bridging theory and practice and developing higher-order thinking skills (Nwankwo & Idoko, 2021).

Benefits of Collaborative Learning Strategy

Research shows that educational experiences that are active, social, contextual, engaging, and student- owned lead to deeper learning. The benefits of collaborative learning include:

- Development of higher-level thinking, oral communication, self-management, and leadership skills.
- Promotion of student-faculty interaction.
- Increase in student retention, self-esteem, and responsibility
- Exposure to and an increase in understanding of diverse perspectives.
- Preparation for real life social and employment situations.

The process of education is aimed at enhancing the academic performance of the students. Only a holistic approach can yield result to improve learning outcomes of the students. Although Academic performance is dependent on many variables like intelligence, socio economic status, personal characteristics, attitude, values, environment, teaching-learning techniques etc. The learning methodology adopted for teaching enhances and affects the achievement of the students (Chandra 2019)

Benefits of Collaborative Learning for Students

Collaborative learning provides students with a rich environment for the development of a wide range of cognitive, social, and emotional skills. According to Johnson and Johnson (2020), collaborative activities stimulate higher-level thinking, encouraging students to engage in analysis, synthesis, and evaluation rather than mere memorization of facts. Through structured group interactions, students develop oral communication skills, improve self-management capabilities, and build leadership competencies as they work together toward common goals.

Furthermore, collaborative learning environments expose students to diverse perspectives, enhancing their ability to appreciate cultural differences, negotiate varying viewpoints, and build mutual respect. Eraikhuemen (2021) emphasized that peer teaching, an inherent component of collaborative learning, reinforces students' understanding as they explain concepts to one another, thereby deepening subject mastery.

Another important benefit for students is the improvement of self-esteem and responsibility. Active participation in group tasks empowers students to take ownership of their learning process, promoting greater confidence in their abilities. Research also suggests that students in collaborative settings exhibit higher retention rates, greater motivation, and stronger commitment to academic success compared to those in traditional lecture environments (Cornelius-Ukpepi, Aglazor, & Odey, 2017).

Collaborative learning also prepares students for real-world social and employment situations. Skills such as teamwork, communication, problem-solving, and adaptability are critical in the modern workforce. By simulating these real-world dynamics within academic settings, collaborative learning equips students with the competencies needed to succeed beyond the classroom.

Benefits of Collaborative Learning for Teachers

Collaborative learning offers significant advantages for teachers as well, particularly in the areas of classroom management, instructional efficiency, and student engagement. One of the primary benefits is the reduction of the instructional burden. By encouraging peer-assisted learning, teachers can shift from being sole knowledge transmitters to facilitators of student-centered learning environments (Johnson & Johnson, 2017). This role transformation allows teachers to devote more

time to individualized support, mentoring, and the cultivation of critical thinking among students.

Cornelius-Ukpepi, Aglazor, and Odey (2019) noted that classrooms structured around collaborative learning tend to be more dynamic and interactive, which enhances overall teaching effectiveness. Teachers benefit from observing students' thought processes during group discussions, providing opportunities for real-time formative assessment and tailored feedback.

Moreover, collaborative learning strategies foster a more positive and cooperative classroom climate. Students who feel supported by their peers are more likely to participate actively, reducing classroom management issues related to disengagement or disruptive behavior. A cooperative environment also promotes the development of students' interpersonal skills, which in turn enhances classroom relationships and teacher-student rapport.

Finally, implementing collaborative learning strategies contributes to professional satisfaction for teachers. Witnessing students actively engage, think critically, support one another, and take ownership of their learning fosters a sense of fulfillment and reinforces the teacher's role in shaping lifelong learners. Collaborative learning thus supports teachers in achieving broader educational goals, including inclusivity, social development, and the cultivation of independent thinkers.

Teacher's Role in Collaborative Learning

Collaborative learning has emerged as a pivotal instructional strategy in contemporary education, emphasizing student-centered approaches that foster critical thinking, communication, and teamwork. Central to the success of collaborative learning is the teacher's role, which has evolved from that of a traditional knowledge transmitter to a facilitator, organizer, and co-learner. Recent research highlights that

teachers are critical agents in designing, implementing, and sustaining effective collaborative learning environments, ensuring that students not only work together but also achieve meaningful academic and social outcomes.

Designing Collaborative Learning Activities: Teachers are instrumental in crafting learning activities that promote collaboration. Recent studies emphasize the importance of structuring tasks that require interdependence, active engagement, and collective problem-solving. Suyato (2024) demonstrated that well-designed collaborative tasks in civic education significantly enhanced students' 21st-century competencies, including critical thinking, civic engagement, and social responsibility. Effective task design involves creating authentic problems that cannot be solved individually, thereby motivating students to rely on each other's strengths. By thoughtfully planning group tasks, teachers lay the foundation for a productive collaborative learning experience.

Facilitating and Guiding Student Interactions: In collaborative learning settings, the teacher assumes the role of a facilitator, guiding student interactions and ensuring that discussions remain focused, respectful, and purposeful. Wagino (2023) emphasized that teachers who actively monitor group dynamics and provide timely support help students develop essential skills such as critical thinking, problem-solving, and effective communication. Rather than dominating the learning process, the teacher encourages student autonomy, stepping in subtly to address conflicts, clarify misconceptions, and foster inclusive participation. Facilitating interaction requires keen observation skills and the ability to adapt strategies based on the needs of different groups.

Modeling Collaborative Behaviors: Teachers also serve as role models for collaborative behaviors, demonstrating practices such as active listening, respectful

dialogue, conflict resolution, and constructive feedback. According to Jiang (2023), when teachers exemplify these collaborative practices, students are more likely to emulate them, leading to a more cohesive and supportive learning environment. Modeling appropriate behavior helps students internalize the norms of effective collaboration and apply them within their groups. Through their actions and communication, teachers show that collaboration involves not only academic work but also social and emotional skills essential for success in both educational and real-world contexts.

Providing Feedback and Assessment: Effective feedback is crucial to the success of collaborative learning. Teachers must provide continuous, formative feedback that supports both group efforts and individual development. Khasawneh (2023) found that when teachers incorporated regular formative assessments and reflective activities, student engagement and academic achievement in collaborative environments improved significantly. Feedback should highlight strengths, address areas for growth, and encourage self- and peer-assessment. Moreover, teachers are responsible for assessing both the group's collective output and each student's individual contributions, ensuring accountability and recognizing personal learning gains within the collaborative framework.

Creating a Supportive Learning Environment: A supportive and safe classroom climate is essential for effective collaboration. Teachers play a key role in establishing norms and values that promote trust, mutual respect, and inclusivity. Foster (2023) highlighted that when teachers cultivate an environment where all voices are valued and intellectual risk-taking is encouraged, students are more willing to engage actively and share ideas. Building this environment involves setting clear expectations for respectful communication, providing emotional support, and recognizing the

diverse backgrounds and perspectives that students bring to group work. A positive atmosphere not only enhances collaboration but also contributes to students' overall well-being and motivation.

Engaging in Continuous Professional Development: Teachers' ability to facilitate collaborative learning effectively is strengthened through continuous professional development. Participation in professional learning communities allows teachers to share strategies, reflect on practices, and stay updated on best practices for promoting student-centered learning. Zuo (2023) reported that teachers who engaged in collaborative professional development activities were more adept at implementing innovative instructional strategies and adapting to the evolving needs of their students. Ongoing professional growth ensures that teachers can create more dynamic and responsive collaborative learning experiences, thereby improving educational outcomes.

Implementation Process of Collaborative Learning Strategies in African Classrooms

The effective implementation of collaborative learning (CL) strategies in African classrooms necessitates thoughtful planning, cultural sensitivity, and alignment with pedagogical best practices. Recent studies highlight the importance of clear objectives, structured group dynamics, and continuous support to foster meaningful student engagements.

1. ***Clarifying Learning Objectives and Rationale:*** Establishing clear learning objectives is fundamental. Educators must articulate the purpose of collaborative learning, emphasizing its benefits for academic achievement and interpersonal skill development. In universities, connecting activities to assessments and linking content to students' lives have been identified as

conducive conditions for CL (Adebola, 2024). Ensuring students understand that cooperation, mutual respect, shared responsibility, and accountability are integral to the learning process.

2. ***Providing Explicit Instructions and Guidance:*** Effective CL requires detailed guidance on tasks, expected behaviors, and communication protocols. In inclusive Foundation Phase classrooms, collaboration among teachers, parents, and other stakeholders has been shown to enhance teaching effectiveness (Jama & Lunga, 2024). According to Cornelius-Ukpepi, Aglazor, and Odey (2016), effective collaborative learning hinges on students receiving detailed guidance on their tasks, expected behaviors, communication protocols, and conflict resolution strategies. Teachers must articulate the procedures students are to follow, including norms for discussion, decision-making, and task delegation.
3. ***Establishing a Supportive Classroom Climate:*** A positive classroom environment that fosters open communication and trust is essential. In rural South African universities, creating a positive classroom culture has been recognized as a conducive condition for CL (Adebola, 2024). Traditional rigid seating arrangements should be replaced with flexible groupings that allow students to maintain eye contact and interact freely. A classroom that encourages sharing of ideas without fear of criticism significantly enhances the success of collaborative learning.
4. ***Strategic Group Composition:*** Forming heterogeneous groups that reflect diverse academic abilities, genders, and backgrounds can enhance peer learning. However, challenges such as language barriers and inadequate infrastructure may hinder effective group interactions (Adebola, 2024).

Students should be assigned to groups diverse in academic ability, gender, language background, and social characteristics to maximize peer learning opportunities (Cornelius-Ukpepi 2016). Allowing students to self-select groups often leads to cliques that undermine collaboration, whereas strategic grouping promotes inclusivity and balanced participation.

5. ***Assigning Roles and Responsibilities:*** Assigning specific roles within groups ensures equitable participation and accountability. In classrooms, cooperative teaching and learning strategies have been implemented to manage group dynamics and enhance student engagement (Belay, 2021). Furthermore, rotating these roles across tasks allows students to develop a range of collaborative skills.
6. ***Designing Interdependent Tasks:*** Tasks should require contributions from all group members, promoting collaboration and shared responsibility. In inclusive classrooms, collaborative approaches have been utilized to enhance teaching effectiveness (Jama & Lunga, 2024). Tasks should be sufficiently complex to require contributions from all members and should involve joint decision-making and problem-solving processes.
7. ***Effective Time Management:*** Setting appropriate time limits encourages efficiency and discipline within groups. In South African science classrooms, time management strategies have been employed to facilitate cooperative learning (Belay, 2021). Flexibility can be allowed based on task complexity, maintaining time consciousness helps instill professional skills among students. Teachers may assign a timekeeper within each group to monitor progress and ensure deadlines are respected

8. ***Monitoring and Facilitating Group Activities:*** Teachers should actively observe group dynamics, address emerging challenges, and provide guidance. In rural South African universities, lecturers have played a pivotal role in promoting pre-service teachers' participation through CL (Adebola, 2024).
9. ***Evaluating Group and Individual Outcomes:*** Assessment should address both group collaboration and individual contributions. In inclusive classrooms, collaborative approaches have been utilized to enhance teaching effectiveness (Jama & Lunga, 2024). Individual assessments through quizzes, reflective essays, or oral presentations are necessary to ensure that each student internalizes the learning objectives (Cornelius-Ukpepi, 2016). Additionally, self and peer evaluations promote critical reflection on group processes, encouraging students to recognize strengths and areas for improvement.

Successful implementation of collaborative learning involves deliberate planning, structured organization, continuous facilitation, and comprehensive evaluation. When carefully executed, collaborative learning strategies foster not only academic achievement but also critical thinking, teamwork, leadership, and lifelong learning skills among students.

The Concept of Clothing Maintenance

Clothing maintenance refers to the set of practices and procedures undertaken to care for, repair, and preserve garments and textile items, ensuring they remain functional, presentable, and durable over time. It involves regular efforts to keep clothing in optimal condition through routine inspection, cleaning, and repair.

Clothing maintenance encompasses the range of practices and techniques designed to preserve the functionality, cleanliness, aesthetic appeal, and structural integrity of garments over time. These practices include laundering, stain removal,

ironing, storage, mending, and appropriate use of textile care agents. The objective is not only to ensure garments remain wearable and hygienic but also to extend their lifespan, enhance their appearance, and reduce the frequency of replacement (Pam, 2024).

Historically, clothing maintenance has evolved from washing by hand in rivers to highly specialized and technologically advanced processes. Modern laundry methods now involve carefully calibrated mechanical systems, chemically formulated detergents, and fabric-specific treatments aimed at minimizing fiber degradation (Kunz & Garner, 2016). With the proliferation of diverse fiber types including natural, synthetic, and blended fabrics laundry science has increasingly emphasized fiber-specific care techniques. For instance, protein fibers like wool and silk require gentle, pH-neutral detergents, whereas cellulosic fibers like cotton can tolerate more vigorous washing and alkaline conditions (Textile Exchange, 2021).

In contemporary textile care, maintenance practices also reflect broader concerns about sustainability and cost-efficiency. Proper laundering, stain removal, and garment repair can prevent premature textile disposal, reduce household expenditures, and lessen the environmental burden associated with excessive clothing consumption and textile waste (Igbokwe, 2024). The integration of visible mending, enzyme-based stain removal, and energy-saving laundering practices such as cold-water washing illustrates a shift toward responsible and eco-conscious garment maintenance.

Clothing Maintenance Practices

Clothing maintenance refers to a series of systematic practices aimed at preserving the appearance, structure, and usability of garments over time. These practices are crucial not only for extending the lifespan of clothing items but also for promoting

hygiene, cost-effectiveness, and environmental sustainability (Pam, 2024; Onyebuchi & Igbokwe, 2023). Key practices in clothing maintenance include laundering, drying, ironing, stain removal, mending, and storage.

Laundering is the foundational practice of clothing maintenance, involving the cleaning of garments using water, detergents, and mechanical action either through hand washing or machine washing. The choice of method depends on the fabric type, colorfastness, and level of soil. Effective laundering not only removes dirt and sweat but also preserves the fabric's texture and integrity when done according to care label instructions (Kingsley & Agbo, 2018).

Laundering is an essential process in clothing maintenance, aimed at cleaning garments, removing stains, and ensuring the longevity of textiles. It involves a systematic approach that includes washing, rinsing, and drying garments, using a variety of methods that are suited to different fabric types. Effective laundering practices are critical for preserving fabric integrity, color, and texture while ensuring hygiene. The key components of laundering sorting, water temperature, detergents, and mechanical action directly influence the effectiveness of the cleaning process.

Sorting in Laundering

Sorting is the initial step in the laundering process and plays a significant role in preventing damage to garments. Garments should be sorted by color, fabric type, and care instructions provided on the label. Sorting by color (e.g., lights, darks, whites) helps avoid color bleeding and dye transfer between fabrics (Pam, 2024). For example, washing white garments with dark-colored fabrics can result in discoloration, especially with synthetic fabrics that release excess dye during washing.

Sorting by fabric type is equally important. Delicate fabrics such as silk, wool, and lace require gentler handling and should be separated from sturdier fabrics like

cotton or polyester. Moreover, items such as towels, bed linens, and heavy-duty clothing should be washed separately from more delicate fabrics to ensure thorough cleaning and to prevent damage caused by friction (Onyebuchi-Igbokwe, 2024). Additionally, garments with specific care instructions, such as dry-clean-only items, should be washed with special attention or sent for professional cleaning.

Water Temperature in Laundering

Water temperature is one of the most significant factors in the laundering process, as it influences both cleaning effectiveness and fabric care. Hot water is generally more effective at dissolving oils and grease and helps kill bacteria and germs. This makes hot water ideal for items such as towels, bed linens, and undergarments (Kunz, 2019). However, it can also lead to shrinkage, fading, and the weakening of certain fibers, particularly those of delicate fabrics like wool, silk, and spandex.

Cold water, while less effective for removing oil and greasy stains, is gentler on fabrics and prevents issues such as shrinkage, fading, and dye bleeding. Cold water is often used for everyday laundry, especially for colored garments and delicates. It is also more energy-efficient than hot water, which makes it a preferred choice for sustainable laundering practices. Recent studies indicate that washing clothes in cold water can reduce energy consumption and minimize the environmental impact of laundry practices (Chen et al., 2020). For heavily soiled items, warm water may be a good compromise, as it balances both cleaning power and fabric care.

Detergents and Their Role in Laundering

Detergents are essential agents in the laundering process, responsible for breaking down oils, dirt, and stains that accumulate on fabric surfaces. Detergents

work by reducing the surface tension of water, which allows it to penetrate fibers more effectively, thereby loosening soil particles. Detergents come in different formulations, with powder, liquid, and pods being the most common types. The choice of detergent should be based on the type of fabric being washed and the nature of the stains.

Traditional detergents often contain surfactants, enzymes, optical brighteners, and fragrances. Surfactants help to break down oils and dirt, while enzymes are particularly useful for breaking down protein stains such as blood, food, or sweat (Chen 2020). Optical brighteners enhance the appearance of garments by reflecting light and making whites appear whiter. These additives make traditional detergents effective for routine laundering, but they may not always be ideal for eco-conscious consumers.

Eco-friendly detergents are formulated with natural, biodegradable ingredients and are free from harsh chemicals like phosphates and chlorine. These detergents are becoming increasingly popular due to their environmental benefits, as they have less impact on water systems and do not contribute to chemical pollution (Okechukwu & Ogundipe, 2019). However, eco-friendly detergents may not be as effective in removing heavy stains or dirt, especially on heavily soiled items.

Mechanical Action in Laundering

Mechanical action, whether through manual or machine washing, plays a vital role in dislodging soil particles from fabric fibers. This process can be achieved through various forms of agitation, including hand washing, machine washing, or dry cleaning.

Hand washing is a gentle method that allows for more control over the intensity of the agitation. It is particularly suitable for delicate items such as wool and

silk that require minimal friction. Hand washing involves rubbing, kneading, and gently scrubbing the garment to remove dirt. It is often recommended for clothing that is prone to damage or shrinkage in a washing machine (Pam, 2024).

Machine washing involves a more intense mechanical action, with the washing machine drum agitating the laundry to help remove dirt and stains. Washing machines typically offer different cycles, including delicate, normal, and heavy-duty cycles, depending on the fabric's durability and the extent of soil. The delicate cycle uses less agitation, which is suitable for fragile fabrics, while the heavy-duty cycle offers more intense agitation for sturdier fabrics such as towels or denim.

Excessive mechanical action can lead to damage, particularly for delicate fabrics. Over-agitation can cause pilling, fading, or even tearing of the fabric, especially with fabrics like wool or synthetic fibers. Therefore, selecting the appropriate cycle and washing method based on the garment's fabric and condition is critical to preserving its integrity (Tull & Family and Consumer Sciences Education Unit, 2015).

Drying garments properly is equally important, as incorrect drying can lead to shrinkage, stretching, or mildew growth. Natural air drying is often recommended for delicate fabrics to prevent heat damage, whereas tumble drying may be suitable for more robust textiles, provided temperature settings are appropriate (Anyakoha, 2015). Weather conditions and fabric content are key considerations in selecting drying methods. Drying is the final step in the laundering process, playing a crucial role in both the appearance and longevity of garments. The method of drying chosen can significantly affect fabric structure, color retention, and the overall wearability of the garment.

Air drying is often considered the gentlest drying method. It reduces the risk of fabric shrinkage and prevents the breakdown of fibers, which can occur with excessive heat (Okechukwu & Ogundipe, 2019). This method involves hanging garments on a clothesline or using a drying rack, where the moisture naturally evaporates. Air drying is particularly beneficial for delicate fabrics such as silk and wool, which can shrink, lose their shape, or become misshapen in a tumble dryer. Recent studies suggest that air drying can also reduce energy consumption, contributing to more sustainable laundry practices (Chen, 2020).

Tumble drying on the other hand, uses heat and mechanical action to accelerate the drying process. It is ideal for fabrics like cotton and polyester, which can tolerate higher temperatures. However, prolonged exposure to high heat can degrade the fibers, causing garments to lose their shape, fade, or shrink (Kunz, 2019). To minimize damage, it is recommended to use lower heat settings and avoid over-drying garments. The use of dryer balls or fabric softeners can help reduce static and prevent wrinkles (Pam, 2024).

Drying time and temperature must be carefully considered based on the fabric's composition and the degree of moisture in the item. For example, wool and silk should not be tumble-dried, while sturdier fabrics such as denim can withstand higher heat and quicker drying times. Therefore, it is important to always refer to garment care labels to ensure proper drying procedures.

Ironing or pressing is essential for removing wrinkles and reshaping garments. It enhances aesthetic appeal and helps maintain garment structure. However, improper ironing such as applying high heat to synthetic fabrics can damage fibers. Thus, knowledge of fabric-specific heat requirements and pressing techniques is necessary for effective maintenance (Esiaba & Uka, 2020). Ironing is a critical garment care

process used to remove wrinkles and creases from fabrics, thereby enhancing the appearance and overall presentation of clothing. The process also helps in restoring the fabric's shape, ensuring that garments look crisp, neat, and professionally presented. Ironing involves the application of heat and steam, which relaxes the fibers and allows them to be pressed into smooth surfaces. However, improper ironing practices can lead to irreversible damage, including burns, shine marks, or distortion of fabric textures. Therefore, understanding the proper techniques for ironing different fabrics is essential to maintaining garment quality and longevity.

The Importance of Ironing in Clothing Maintenance

Ironing serves several functions in clothing maintenance:

Aesthetic Appeal: One of the primary reasons for ironing garments is to improve their appearance. Wrinkles can make clothes look worn out and unkempt. By applying heat, fabrics return to their intended smooth state, contributing to a polished and professional look.

Restoring Shape: Ironing also helps to restore the original shape of a garment, particularly after washing, where clothes may have shrunk, stretched, or lost their crisp form. Pressing pleats, collars, cuffs, and hems helps to maintain the garment's structure (Onyebuchi-Igbokwe, 2024).

Sanitization: The heat generated during ironing can help eliminate bacteria and dust mites, which may not have been fully removed during laundering. Steam ironing can also help to refresh and sanitize delicate garments that cannot be washed frequently (Tull & Family and Consumer Sciences Education Unit, 2019).

Ironing Techniques and Best Practices

Ironing involves several key steps and precautions to ensure that garments are pressed without causing damage:

Correct Temperature Setting: Different fabrics require different temperatures to avoid damaging the fibers. Most modern irons come with fabric-specific settings, which should be adhered to in order to achieve optimal results.

Cotton and linen can withstand higher heat levels and benefit from a steam setting, which helps in removing stubborn wrinkles.

Delicate fabrics such as silk, wool, and synthetics (polyester, nylon), require lower heat to prevent scorching or melting. Wool and silk should be ironed with a lower heat setting or with a pressing cloth to protect the fabric (Pam, 2024).

Always check the garment's care label for specific instructions on ironing temperature.

Use of Steam:

Steam is essential in the ironing process, as it helps to loosen fibers and remove wrinkles more effectively. The moisture from steam relaxes fabric fibers, allowing them to be reshaped and smoothed out easily. For fabrics that wrinkle easily, such as cotton and linen, using the steam function on an iron helps to achieve a crisp finish.

For synthetic fabrics like polyester, too much steam can cause water spots or damage the fiber, so it should be used sparingly. Wool and silk can benefit from light steam, but direct contact with steam should be avoided on very delicate items.

Ironing Techniques:

Start from the Collar and Cuffs: For shirts and blouses, begin by ironing the collar, cuffs, and sleeve hems. These areas often require more attention and should be pressed first to prevent the creation of new wrinkles on the rest of the garment.

Pressing, Not Scrubbing: Use a gentle pressing motion rather than scrubbing or dragging the iron across the fabric. This minimizes the risk of fabric stretching or damage.

Ironing in Sections: Iron garments in sections, starting from the top down. For example, when ironing pants, press the waistband, then the legs, and finish with the cuffs.

Avoiding Direct Contact with the Iron: For delicate fabrics like silk, always place a thin cloth, such as a cotton handkerchief, between the iron and the garment to prevent direct heat contact.

Use of Pressing Cloth

A pressing cloth, often made from cotton, can be used to protect delicate fabrics from direct heat and prevent scorch marks. Pressing cloths are particularly useful for ironing wool, silk, and other delicate materials that might burn or shine if exposed directly to an iron.

Ironing Different Fabrics

Different fabrics require different care when ironing, and knowing how to handle each material will ensure that clothes are pressed without causing damage:

1. *Cotton and Linen:* Cotton and linen are durable fabrics that can handle high heat settings. These materials respond well to steam and can be pressed to remove wrinkles and restore their shape. Linen, in particular, benefits from a heavy steam application due to its tendency to wrinkle easily (Onyebuchi-Igbokwe, 2024).
2. *Wool:* Wool should be ironed with care, as excessive heat can cause it to shrink or distort. Use a medium-low heat setting with steam, and always iron wool garments on the reverse side or with a pressing cloth. Wool suits and coats often require steaming rather than ironing to maintain their shape and texture.

3. *Silk*: Silk is one of the most delicate fabrics and should be ironed on the lowest heat setting. It is recommended to place a cotton pressing cloth between the iron and the silk fabric to avoid direct contact with heat. Iron the fabric while it is slightly damp or use the steam function at a distance to gently press the garment (Pam, 2024).
4. *Synthetic Fabrics*: Synthetic fabrics, such as polyester and nylon, are heat-sensitive and can melt under high temperatures. Iron these fabrics on the lowest setting without steam, or use a pressing cloth to protect the fabric. It is also advisable to iron these fabrics while they are slightly damp to prevent overheating (Tull & Family and Consumer Sciences Education Unit, 2015).

Stain removal

Stain removal requires the identification of stain types (e.g., oil, ink, protein-based) and the application of suitable treatment agents. Timely action and the correct use of solvents or household remedies can prevent permanent discoloration. For unknown stains, general procedures involve blotting, testing on inconspicuous areas, and using mild detergents before stronger agents are applied (Uzoezie, 2021). Stain removal is an essential aspect of clothing maintenance, as it helps to restore the garment's appearance and extends its lifespan. Various stain types require specific techniques, and improper removal methods can sometimes cause more harm than good, such as setting the stain or damaging the fabric.

Stain removal products are widely available in the market, ranging from liquid sprays to sticks, powders, and wipes. Some of these products contain enzymes that break down protein stains or surfactants that lift oil-based soils. Eco-friendly stain removers, which utilize natural ingredients such as vinegar, baking soda, and lemon

juice, have gained popularity due to their gentle nature and environmental benefits (Chen, 2020).

Types of stains include

- *Protein stains* (e.g., blood, sweat, eggs) that respond well to enzymatic cleaners or cold water.
- *Oil-based stains* (e.g., grease, lipstick, cooking oils) that require a degreasing agent or dish soap.
- *Tannin stains* (e.g., coffee, tea, wine) that are best treated with hot water and an oxygen bleach.
- *Dye stains* (e.g., ink, paint, hair dye) require specific stain removers or alcohol-based solutions (Okechukwu & Ogundipe, 2019).

General stain removal process involves:

1. *Immediate action*: It is critical to address stains as soon as possible before they set. For most stains, it is advised to blot (not rub) the stain to avoid spreading it further.
2. *Pre-treatment*: Use a pre-treatment stain remover or a mild detergent directly on the stain. For heavy stains, letting the detergent sit for 10-15 minutes may enhance removal.
3. *Washing*: Once pre-treated, wash the garment according to the fabric's care instructions. For stubborn stains, repeat the process as necessary.
4. *Drying*: Air dry the garment after washing, as the heat from a tumble dryer can set any remaining stain (Tull & Family and Consumer Sciences Education Unit, 2015).

Mending and repairs contribute to garment longevity by addressing issues such as loose buttons, torn seams, or frayed edges. These minor repairs, when done

promptly, prevent further deterioration and reduce the need for replacements. Teaching mending skills is essential, particularly among students, to foster self-reliance and sustainable fashion practices (Pam, 2024).

Mending is an essential part of a more sustainable approach to clothing maintenance. With the growing concern over textile waste and the environmental impact of fast fashion, repairing garments instead of discarding them can contribute significantly to reducing waste. Additionally, learning mending skills helps individuals become more self-sufficient and reduces reliance on expensive dry cleaning or alterations services (Okechukwu & Ogundipe, 2019). The practice of mending promotes a culture of clothing longevity and resourcefulness, making it an integral part of sustainable living.

Storage plays a preventive role in garment maintenance by safeguarding clothes from environmental damage. Appropriate storage methods such as using padded hangers, moth repellents, or breathable garment bags can help maintain fabric quality and prevent pests, mold, and dust accumulation (Onyebuchi & Igbokwe, 2023). Proper storage is vital to maintaining the integrity of garments over time. Improper storage can lead to damage such as fading, stretching, or the development of mold or mildew.

Hanging is appropriate for garments such as dresses, suits, and blouses. Items should be hung using appropriate hangers wide, padded hangers for delicate items like wool coats and padded items, and firm, non-slip hangers for more structured garments like jackets and trousers. Overcrowding in a wardrobe can cause garments to lose their shape, so sufficient space should be maintained for air circulation (Pam, 2024).

Folding is generally recommended for knitted fabrics and more delicate items such as sweaters. Folding prevents stretching and helps garments maintain their shape.

For long-term storage, it is essential to ensure that garments are clean before folding to prevent the attraction of dust and pests (Okechukwu & Ogundipe, 2019). Garments should be stored in breathable fabric bags to avoid moisture accumulation and preserve fabric quality.

Storage environment is equally important. Garments should be stored in cool, dry places away from direct sunlight, as prolonged exposure to UV rays can lead to fading. Damp environments can promote mold growth, while overly humid conditions can weaken fibers (Pam, 2024). For seasonal storage, it is advisable to store garments in sealed plastic bags or vacuum-sealed containers to prevent damage from insects and dust

These practices form the core of effective clothing maintenance. When practiced consistently, they promote responsible consumption, reduce textile waste, and support environmental goals, especially in the face of fast fashion trends. In the context of Home Economics education, imparting these practices to students equips them with lifelong skills that are practical, sustainable, and economically beneficial.

Garments made from delicate or high-value materials require specialized care due to their sensitive nature and intricate construction. Fabrics such as silk, lace, chiffon, and natural fibers like wool and cashmere are particularly vulnerable to damage from heat, friction, and harsh detergents. Additionally, clothing items embellished with beads, sequins, embroidery, or lace overlays necessitate gentle handling to prevent tearing, discoloration, or loss of decorative elements. These cherished garments often cannot withstand conventional laundering and may require dry cleaning, hand washing with mild detergents, or storage under controlled conditions. According to Pam (2024), failure to follow appropriate care procedures for such garments can lead to shrinkage, fiber breakdown, or aesthetic deterioration.

As a result, specialized care not only preserves the beauty and integrity of these garments but also contributes to sustainable clothing use by extending their lifespan.

Effect of Collaborative Learning Strategy on Student Academic Achievement

Collaborative learning has emerged as a significant instructional strategy within contemporary educational frameworks. Defined as an educational approach whereby groups of learners work together to solve a problem, complete a task, or create a product, collaborative learning emphasizes small group dynamics, cooperative behavior, positive interdependence, and individual accountability (Chandra, 2015). The essential features of collaborative learning distinguish it from more traditional, teacher-centered instructional methods, advocating instead for student-centered engagement where learners share responsibility for both group and individual learning outcomes.

Further insights into collaborative learning draw parallels with Communicative Language Teaching (CLT), which emphasizes interactive learning between teachers and students as well as among peers. According to Zang (2010), the communicative exchanges fostered through collaborative learning facilitate the development of communicative competence, as students engage not merely in passive reception of information but in active processes of thinking, reasoning, questioning, and problem-solving. Through these interactions, learners are said to unconsciously enrich their cognitive repositories, developing critical thinking skills and deeper conceptual understanding.

Academic achievement, a central metric in evaluating educational outcomes, generally refers to the extent to which a student has attained specified learning objectives. It is often measured through standardized assessments, course grades, and cumulative Grade Point Averages (GPA), serving as a key indicator of student

learning and progress within formal educational systems. In the context of higher education, particularly, academic achievement is closely linked to instructional strategies employed within the classroom environment.

A considerable body of research supports the positive relationship between collaborative learning and improved academic achievement across various disciplines and educational levels. Studies have consistently demonstrated that students engaged in structured collaborative activities exhibit enhanced critical thinking skills, deeper content understanding, and superior performance on evaluative tasks compared to their counterparts in traditional, individualistic learning settings. Collaborative learning strategies encourage the active engagement of students in their educational experiences, thereby fostering better retention of knowledge and promoting meaningful learning.

Conversely, the absence of collaborative opportunities within the learning environment has been associated with poor academic performance, diminished perceptions of social support, and lower self-esteem among students. Uwizeyiman (2018) highlighted that limited collaboration can impede students' academic progress and social development. In contrast, the implementation of collaborative learning techniques has been shown to not only bolster students' academic outcomes but also to enhance teamwork abilities, sustain student engagement, and facilitate effective knowledge transfer (Nkechinyere, 2018).

Moreover, collaborative learning provides students with greater autonomy over their learning processes, cultivating both academic and social relationships necessary for achieving shared goals. Eskay, Obiyo, and Obidoa (2012) argued that collaborative strategies foster positive peer interactions, strengthen social skills, and create conducive environments that support the active participation of students in

learning activities. These outcomes collectively contribute to higher academic achievement, highlighting the critical role of collaborative learning in contemporary education.

Gender and Academic Achievement

Gender has long been seen as an important factor influencing students' academic interests, participation, and achievement in different subjects. Ukwueze, as cited in Agim (2016), noted that the teaching methods used by teachers can strongly affect how well boys and girls perform in school. While “sex” refers to biological differences, “gender” refers to the roles, behaviors, and expectations that society creates (Nnaka & Anaeke, as cited in Anaeke & Nnaka, 2020). Gender has consistently been an important variable examined in educational research due to its potential influence on academic achievement. Academic achievement, defined as the performance outcomes attained by students in educational tasks, assessments, or examinations, may vary due to gender differences stemming from biological, psychological, cultural, and social factors (UNESCO, 2021).

Research literature highlights varying perspectives on the relationship between gender and academic achievement, but the findings have not been consistent. Some studies suggest significant gender differences exist in academic performance, often highlighting female students outperforming their male counterparts in subjects that require verbal abilities, memorization, and practical organization, while males sometimes excel in areas requiring spatial reasoning, analytical thinking, and problem-solving skills (OECD, 2022). Ezenwosu and Nworgu, (2022), found that gender did not make a difference when students were taught with experimental teaching methods. Both male and female students taught with special methods performed better than those taught in traditional ways. In the same way, Bayim (2016)

and Oleabhiele (2021), reported that gender had no real impact on how well students achieved. This suggests that with good teaching methods, boys and girls can do equally well in school.

Similarly, Eze, Ezenwafor, and Obidile (2016) explained that even if some gender differences exist, using the right teaching methods can remove those gaps. Olusola-Fadumiye and Jamalludin (2021) also pointed out that students' success depends more on how well the teacher teaches than on whether the student is male or female. Therefore, collaborative learning strategies, if well planned and used, can help all students succeed, no matter their gender. However, a few studies showed some small differences. For example, Ewah (2016) found that male students tended to score lower in several subjects. On the other hand, Umar, Yagana, Hajja, and Mohammed (2015) found that while boys had higher literacy rates, girls often got higher ranks in competitive exams. Similarly, Hyde and Mertz, as cited in Nwagwu (2022), found that when boys and girls were given the same learning opportunities, girls slightly outperformed boys, showing that equal access to education is very important.

Despite these small differences, most researchers agree that the teaching method matters more than gender when it comes to student achievement (Azih & Nwosu, 2022). Good teaching can help all students perform well, no matter their gender. However, in vocational and skill-based courses such as Home Economics and specifically clothing maintenance, evidence remains mixed. According to Adu and Olatundun (2020), female students typically achieve higher academic success in Home Economics-related subjects due to higher societal expectations, increased motivation, and stronger practical engagement. Conversely, other studies indicate negligible or no significant differences in academic outcomes between genders,

suggesting that instructional strategies and learning environments might substantially mediate or eliminate these gender disparities (Okafor & Ezeugwu, 2021).

In collaborative learning environments, gender dynamics become particularly noteworthy. Collaborative learning approaches potentially mitigate gender biases and promote inclusivity by providing equitable opportunities for participation and peer interaction. Oyarole and Bello (2022) argue that collaborative learning strategies help reduce performance gaps between genders, as they allow male and female students to actively participate, communicate, and support each other academically. Collaborative tasks encourage diverse perspectives, enable equitable contribution, and facilitate mutual respect, thereby potentially diminishing stereotypical gender-role perceptions.

Because there is no clear pattern about how gender affects achievement, it is important to study this topic further, especially in practical, skill-based subjects like Clothing Maintenance. Therefore, this study will not only examine how collaborative learning strategies affect academic achievement but also check if gender plays a role in the performance of Home Economics undergraduates

Age and Students' Academic Achievements

Age has been identified as a significant factor influencing students' academic achievement, particularly in relation to grade placement and cognitive development. Research suggests that older students within a grade cohort often outperform their younger peers due to greater maturity, emotional regulation, and cognitive readiness (Bedard & Dhuey, 2021). This phenomenon, commonly referred to as the "relative age effect," highlights the advantage that students born earlier in the academic year have over those born later (Crawford, Dearden, & Greaves, 2020). Moreover, age-related differences can influence learning pace, classroom participation, and social interaction, all of which are crucial to academic success (Kariippanon, 2019).

Conversely, delayed school entry or age-grade mismatch can negatively impact academic outcomes, particularly among students from disadvantaged backgrounds (Morrison, Kim, Connor, & Grammar, 2022). These findings underscore the importance of considering age and developmental readiness when designing education policies and classroom interventions.

Socio-Economic Status and Academic Achievement

A substantial body of contemporary research confirms a strong correlation between socio-economic status (SES) and academic achievement. Students from higher SES backgrounds consistently outperform their peers from lower SES families in areas such as standardized test scores, school engagement, and educational attainment. This persistent disparity is often referred to as the “achievement gap” (Reardon, 2016). Recent studies have shown that access to educational resources, parental education levels, and neighborhood quality play critical roles in shaping student outcomes (Garcia & Weiss, 2019). Furthermore, socioeconomic disadvantages often translate into reduced opportunities for cognitive development, school readiness, and long-term academic success (Davis-Kean, Chambers, Davidson, Kleinert, & Ren, 2021). According to Sirin (2005) and further supported by recent empirical findings, SES continues to be one of the most reliable predictors of academic performance in both developed and developing countries (OECD, 2020).

Review of Related Empirical Studies

Stella and Okoli (2024) investigated the effect of collaborative learning style on secondary school students’ academic achievement in Orumba south local government. Two research questions guided the study and three hypotheses were tested at 0.05 level of significance. Quasi- experimental design was used. Population of the study was 936 Senior Secondary school II students offering Biology in Orumba

south local government area. A sample of 87 SSII Biology students from two schools was obtained using simple random sampling technique. A validated instrument was used for data collection. Reliability was established using Kuder Richardson 20(KR-20) for BAT which yielded coefficient of 0.86. The data collected were analysed using mean and standard deviation for research questions while analysis of covariance was used to test the null hypotheses. Results indicated that collaborative learning improves secondary students' achievement and interest in Biology compared to conventional learning styles. Collaborative learning significantly influences achievement scores and interest levels, with no notable gender differences. While females show a greater increase in interest with collaborative learning, there is no significant interaction effect, suggesting universal benefits. These findings support a wider adoption of collaborative learning to enhance educational outcomes in Biology for all students. This study relates to the current study because both explore the effect of collaborative learning strategies on students' academic achievement. However, while Stella and Okoli focused on secondary school Biology students, the present study examines Home Economics undergraduates specializing in Clothing Maintenance.

Ugwu, Benson, Kate and Chinedu (2024) investigated the effect of collaborative learning instructional technique and peer tutoring instructional technique on students' academic achievement in Biology in Enugu state. Three research questions and three hypotheses guided the study. The design was quasi-experimental specifically non-equivalent control group design. The population of the study comprised of 2518 SS1 students in Nsukka Local Government Area of Enugu State. A sample size of one hundred and thirty-one (131) SSI Biology students was used for the study. Two intact classes were selected from the two purposely sampled schools.

Among the two schools, each class were treated using cooperative and peer tutoring instructional techniques respectively. The two experimental groups were exposed to pre-test and post-test respectively. The research questions were answered using mean and standard deviation, while Analysis of Covariance (ANCOVA) was used to test the hypotheses, at 0.05 level of significance. Results obtained revealed that there was significant difference in the mean achievement scores of students taught Biology using collaborative learning and peer-tutoring technique in favour of the collaborative learning group. Gender had no significant influence on students' achievement in Biology. Also, the interaction of instructional techniques and gender had no significant effect on students' achievement in Biology. Based on the findings of this study, it was concluded that collaborative learning was more effective in enhancing students' achievement in Biology in senior secondary schools. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement. However, while Ugwu, Benson, Kate, and Chinedu focused on SS1 secondary school students learning Biology, the present study targets Home Economics undergraduates learning Clothing Maintenance.

Agim and Nwosu (2024) carried out a study to ascertain the effect of collaborative learning strategy on office technology and management students' academic achievement and interest in office management. Two specific purposes, research questions and null hypotheses were carefully developed to guide the study. In carrying out this study, a quasi-experimental design was adopted which involved both treatment and control groups to be used intact since no randomization was needed. The population of the study comprised of NCE III students. Two colleges of education were selected through a purposive sampling technique. One group comprising of 34 students of both male and female was assigned to the treatment

group and the other group made up of 26 students was assigned to the control group. An instructional package was developed for each of the groups. Package for the treatment group was the collaborative learning strategy while the package for the control group was individualized learning method. Data were collected with the aid of two instruments namely: Office Management Achievement Test (OMAT) and the Office Management Interest Inventory (OMII). Both instruments were validated and necessary adjustments made. The internal consistency testing of OMAT using K-R20 yielded a reliability index of 0.94. Also, Cronbach alpha of 0.94 was obtained from the reliability testing of OMII. Data for the two research questions that guided the study were answered using mean and standard deviation. On the other hand, the two hypotheses that guided the study were tested using ANCOVA. The results revealed that collaborative learning strategy has a strong positive effect on Office Technology and Management Students' Academic Achievement and Interest in Office Management. Collaborative learning strategy, in this study, is better than the individualized learning method in enhancing both male and female students' academic achievement and interest. This study relates to the current study because both focus on the effectiveness of collaborative learning strategies in enhancing students' academic achievement. However, while Agim and Nwosu focused on NCE III students in Office Technology and Management, the present study investigates Home Economics undergraduates learning Clothing Maintenance. Additionally, while Agim and Nwosu assessed both achievement and interest, the current study is more specifically focused on academic achievement alone.

Mugri (2023) carried out a study on the impact of Collaborative teaching on students performance in Higher Education Institutions in Cameroon. The study was guided by four research questions and hypotheses. The researcher employed the use

of the descriptive survey research design frequency, percentage, mean and standard deviation. Data was collected using Likert Scale; strongly Agree, Agree, Disagree and Strongly Disagree. A sample size of 326 respondents were chosen from 5 state Universities in Cameroon using the Krejcie and Morgan table (1970) to determine the sample size. A self-administered and online questionnaire was used to collect information from respondents. The collected data were analyzed by Statistical Product Service Solution (SPSS). Correlation, coefficient and ANOVA was used to test the various hypotheses and to show the relationship between collaborative teaching and Students performance. Regression was also used in the case of brainstorming to predict its level of significance students' performance. The finding of the study revealed collaborative teaching has positive contribution on Students Performance. The study established a positive relationship between collaborative teaching and students' performance. Collaborative teaching will increase students' performance if well used. This study relates to the current study because both investigate the effect of collaborative or cooperative teaching strategies on students' academic achievement. However, while Mugri focused broadly on students' performance across different disciplines in higher education institutions in Cameroon, the present study specifically examines the effect of collaborative learning strategy on academic achievement among Home Economics undergraduates in Clothing Maintenance in Nigeria.

Chikaodiri and AguMkpa (2023) investigated the Effects of Cooperative Learning and Lecture Methods on Senior Secondary School Students' Academic Achievement in Accounting in Abia State. Three research questions were posed and answered, while three hypotheses were formulated and tested at 0.05 level of significance. The study was carried out using a total of 100 senior secondary school II out of 4,481 senior secondary school students in two Education Zones of Abia

State. A quasi experimental design was used. Specifically the pre-test, post – test control group design and a 2 x 2 x 2 factorial design were utilized in the study. The data collection instrument was a 50 item multiple choice Accounting Achievement Test (AAT). The control group was taught using lecture method, while the experimental groups were taught using cooperative learning method. Data were analyzed using mean, standard deviation, z-test and ANCOVA. The study revealed that students taught with cooperative learning method performed significantly better in Achievement test in Accounting than those taught with lecture method of the same Accounting lessons. Cooperative Learning Method had great impact on the students. Students taught with cooperative method in rural areas performed better than those in urban areas. There is a significant difference between those taught Accounting with cooperative learning method and those taught with lecture method. Based on the findings, the researcher concluded that cooperative learning method is effective instructional approaches for teaching of Accounting. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement

Samuel and Chibuzor (2023) investigated the effect of collaborative learning on academic achievement of secondary school Biology students in Abia State. Two research questions and two null hypotheses guided the study. Quasi experimental research design was adopted for this study. The population of the study comprised 13,306 SSII Biology students (6,415 males and 6,891 females) in 2020/2021 academic session. A sample of 84 SSII Biology students consisting of 38 males and 46 females was drawn in multi stages using purposive and simple random sampling techniques. Biology Achievement Test (BAT) adapted from past WAEC questions was used for data collection. The instrument was subjected to reliability test using

Kuder Richardson 20 (KR20) test statistics, and a reliability coefficient of 0.78 was obtained. Mean and standard deviation were used to answer the research questions while the null hypotheses were tested using Analysis of Covariance (ANCOVA) at 0.05 level of significance. Findings from the study showed that students taught Biology using collaborative learning method achieved higher than those taught with lecture method. Furthermore, there was no significant difference in the academic achievement of male and female students exposed to collaborative learning method. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement. However, while Samuel and Chibuzor focused on secondary school students learning Biology, the present study investigates the academic achievement of Home Economics undergraduates in Clothing Maintenance. Furthermore, while Samuel and Chibuzor also examined gender differences, the present study places more emphasis on the general effect of collaborative learning on achievement.

Eggon, Simon and Suleiman (2022) investigated the effects of collaborative learning strategy on students' attitude and achievement in energy in Nasarawa state, Nigeria. The population of the study consisted of 31,731 Junior Secondary School Students in Nasarawa State Nigeria. The sample comprised two intact classes with 138 JSII Students. The design used was a quasi- experimental pre-test, post-test post post-test non- equivalent control design. Two research questions were raised in relation with two objectives of the study and two correspondent hypotheses. A multistage random sampling technique was used for the study. The instruments used were: Energy Achievement Test (EAT) and Energy Attitude Scale (EAS). The validity indexes were 0.83 EAT and 0.89 EAS respectively. The reliability coefficient of the instruments was determined using Kuder- Richardson K_{R21} formula

for EAT and Cronbach Alpha. Their reliability indexes were 0.81 for EAT and 0.79 for EAS. Description statistics of mean and standard deviation were used to answer the research questions, while inferential statistics of ANCOVA was used to test the hypothesis at 0.05 level of significant. The findings revealed that students who were taught Energy using collaborative learning strategy performed better than those taught using conventional method. ($F_{100, 938}$; $p_{0.000} < \alpha_{0.05}$) for attitude and $F_{13.453}$; $P_{0.000} < \alpha_{0.05}$ for achievement. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement. However, while Eggon, Simon, and Suleiman focused on Junior Secondary School students learning Energy concepts in science, the present study investigates Home Economics undergraduates in Clothing Maintenance. In addition, while their study also examined students' attitudes, the current study concentrates solely on academic achievement.

Okeke and Alichu (2022) Conducted a study to determine the effect of cooperative learning strategy on secondary school students' academic achievement and interest in Financial Accounting in Abia State. Two research questions and two null hypotheses guided the study. The design of the study was quasi experimental design, with pretest and posttest non-equivalent control group. The population of the study comprised 846 public senior secondary school two (SS 2) students in Abia State. A sample of 55 students was drawn using purposive sampling technique for the study. The instruments for data (achievement test – FAAT, and interest questionnaire – FAIQ) were validated by three experts. Reliability coefficients of 0.80 and 0.79 were obtained using Kuder Richardson formula 20 and Cronbach's alpha respectively. Mean and standard deviation were used to answer the research questions and ANCOVA was used to test the null hypothesis at 0.05 level of significance. The

findings revealed that the students taught financial accounting using cooperative learning strategy performed better than their counterparts taught using lecture method.

Niyonsaba, Nkurunziza and Hakizimana (2022) investigated the impacts of a collaborative learning teaching approach on learners' academic performance in chemistry in three secondary schools purposively selected within the Nyamasheke district in Rwanda. At each school, two classes of senior two (S2) were purposively selected whereby one class was taken as a control group, while the second parallel class formed an experimental group. Thus, all the control groups comprised 128 students, while the experimental groups comprised 133 senior two students. To collect data, a pre-test and post-test were given to the students. The data were analyzed using descriptive and inferential statistics (i.e., t-test generated by Microsoft Excel 13). The results from the t-test showed $[t(257) = -8.05, p = .000; p < .001]$ which indicates that there is a statistically significant difference in mean scores between the two groups. The null hypothesis, therefore, is rejected in favor of the alternative hypothesis to confirm that students taught using a collaborative learning teaching approach performed better in preparation and classification of oxides than those taught using traditional lecture teaching methods. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement. However, while Niyonsaba, Nkurunziza, and Hakizimana focused on secondary school students learning Chemistry, the current study investigates the academic achievement of Home Economics undergraduates in Clothing Maintenance.

Nonye and Eleojo (2021) examined the effect of collaborative learning strategy on students' academic achievement in Chemistry in Onitsha education zone, Anambra State. Two research questions were raised and three null hypotheses were tested. Quasi-experimental research design, specifically, pretest-posttest

nonequivalent groups design was adopted for the study. Findings of the study revealed that collaborative learning strategy has a higher positive effect on students' academic achievement in Chemistry than the conventional teaching method and the difference was significant. Also, the study disclosed that collaborative learning strategy had more effect on female students' academic achievement in Chemistry than on male students and the difference was not statistically significant. This study relates to the current study because both investigate the impact of collaborative learning strategies on students' academic achievement. However, while Nonye and Eleojo focused on secondary school students learning Chemistry, the present study examines Home Economics undergraduates focusing on Clothing Maintenance.

Chijioke and Tugwel (2018) investigated the effects of collaborative learning on academic achievement of students in Technical Drawing in Rivers State University, Port Harcourt, Nigeria. The study adopted quasi-experimental pre-test post-test control design. A sample size of 28 technical education first year students out of a population of 55 students of technical education department in the University was purposively sampled for the study. Two research questions and two hypotheses guided the study. The instrument used for data collection was Technical Drawing Achievement Test (TDAT), which was validated and its reliability coefficient of 0.86 was obtained using Kuder Richardson formula. Mean was used to analyze data for the two research questions while t-test was used to test the two null hypotheses at 0.05 level of significance. The major finding revealed an improvement in students' academic performance in Technical Drawing after being taught with collaborative learning. This study relates to the current study because both examine the effect of collaborative learning strategies on students' academic achievement. However, while Chijioke and Tugwel focused on first-year technical education students in Technical

Drawing, the present study investigates Home Economics undergraduates in Clothing Maintenance.

Adeoye and Igbinedion (2018) investigated the effect of collaborative teaching method on students' academic achievement in Business Studies in Junior Secondary Schools in Edo State, Nigeria. Two research questions were raised, and two hypotheses were tested at 0.05 level of significance. Quasi-experimental research design of non-randomized pre-test, post-test was employed. The population of the study was 182 Business Studies students in Junior Secondary Schools in Oredo Local Government Area of Edo State. The study sample was made up of 160 intact group classes of Junior Secondary School (J.S.S 2) students. A multi-stage sampling technique was employed. The instrument for data collection was 50 multiple choice items Business Studies Achievement Test for both pre-test and post-test. The reliability of the study was determined using test re-test method which gave a coefficient value of 0.78. The result of the pre-test and post-test were analyzed using Mean, Standard Deviation, ANCOVA and independent t-test. It was concluded that the collaborative teaching method produce better academic achievement in Business Studies than lecture teaching method. This study relates to the current study because both explore the effectiveness of collaborative learning strategies in improving students' academic achievement. However, while Adeoye and Igbinedion's study was conducted among junior secondary school students learning Business Studies, the present study focuses on Home Economics undergraduates studying Clothing Maintenance.

Uwameiye (2016) carried out a study on co-operative learning strategy and student's academic achievement in Home Economics Oredo local Government Area of Edo State. The research was a quasi – experimental design. A simple random

technique (table of random numbers) was utilized to select a total of 169 students for the study. The instrument used was the Home Economics Achievement Test (HEAT). Data collected from the pre-test and post-test were analyzed using mean, standard deviation and t-test at 0.05 level of significance. Findings from the study showed that the experimental group had a mean score of (57.5) with a standard deviation (SD) of 3.7. The control group had a mean score of (42.3) with a standard deviation (SD) of 3.1. A comparison of the mean scores on the post test showed that the students in the experimental group produced a higher level of achievement in Home Economics than those in the control group. t-test revealed that the t-calculated value of 4.21 is greater than the t-critical table of value of 1.96 at $P < 0.05$ level. Hence the null hypotheses is rejected. There is a difference between scores of students taught with co-operative learning strategy and scores of those taught with lecture method. This study relates to the current study because both explore the effectiveness of collaborative learning strategies in improving students' academic achievement. However, while Uwameiye study was conducted among junior secondary school Home Economics students, the present study focuses on Home Economics undergraduates studying Clothing Maintenance.

Gull and Shehzad (2015) sought to determine effect of cooperative learning method on students' achievement in subject of Education. Quasi experimental design, with pre and post-test of control and experimental group was used to achieve target of the study. Sample of the study consisted of 63 female students enrolled in grade 12 of a public college. An achievement test was used as a pre-test, the students were then divided in experimental and control groups. Multiple cooperative learning activities were performed with experimental group by using three common methods of cooperative learning i.e., STAD, TGT and Jigsaw II. The control group was taught by

lecture method only. After 8 weeks a post test was administered on both experimental and control group in order to identify difference in achievement. The independent sample t-test was used to measure the mean scores difference between achievement scores of control and treatment groups on pretest. The results showed that there was no significant difference between the two groups ($p=.825$) leading to assumption that both groups were on equal level of achievement before intervention. Same test was applied to find out difference between two groups before and after intervention. The results showed that there was a significant difference in scores of control and experimental group in post-test. In addition to this paired sample t-test was conducted to compare the effect of intervention on achievement scores of experimental group. The results showed that there was significant difference between scores of experimental group before and after intervention ($p=.000$). This study relates to the current study because both focus on the impact of collaborative or cooperative learning strategies on students' academic achievement. However, while Gull and Shehzad's study involved secondary school students studying Education, the present study investigates Home Economics undergraduates focusing on Clothing Maintenance. Moreover, while multiple cooperative strategies were combined in Gull and Shehzad's study, the present study specifically emphasizes collaborative learning as a singular instructional approach.

Summary of Related Literature Reviewed

In this study, careful efforts were expended in the review of relevant literature on Effect of collaborative learning strategy on academic achievement in clothing maintenance among home economics education undergraduates in Edo State. The literature reviewed gave some insight into theoretical and conceptual frameworks of the study. The theoretical frame work was hinged on the theory of Social

Constructivist Theory, which was developed by Lev Vygotsky, in 1978, upon which the study was based. This serves as a guide for the construction of the instructional designs used in this study. The proposed conceptual framework the study used was highlighted, this was developed by the researcher. The study further reviewed existing literature on the concept of collaborative learning strategies, clothing maintenance and academic achievement, Concept of Home Economics Education in University Education in Nigeria, Gender Issues in Home Economics Education and Students Academic Achievements, Concept of Teaching Method, Conventional Teaching Method, Concept of Collaborative Learning Strategy, Collaborative learning strategy and Student Academic Achievement , Concept of Clothing Maintenance, Gender and Academic Achievement, Age and students' academic achievements then Socio-economic status and students' academic achievements

Fourteen (14) related empirical studies from various scholars were also reviewed. However, despite several theoretical and empirical studies, both local and international, on collaborative learning strategy, little or no literature is available on clothing maintenance among undergraduate students taking into consideration their gender, age and socioeconomic status of the students specifically in Edo State and Ondo State. Also most of the literatures reviewed did not focus on University undergraduate students.

Out of the Fourteen (14) of such studies that were reviewed, the work of Uwameiye (2016) who carried out a study on co-operative learning strategy and student's academic achievement in Home Economics Oredo local Government Area of Edo State. While Uwameiye study was conducted among junior secondary school Home Economics students, was most related to the present study in terms of addressing academic achievement, design, and subject area. However the present

study will measure the effect of collaborative learning on academic achievement in clothing maintenance among undergraduate students. Despite the works done by various researchers on collaborative learning strategies non to the best of the researchers knowledge non was done on clothing maintenance. Therefore this study intends to fill that gap.

CHAPTER THREE

METHODOLOGY

This chapter explains the techniques and methods that will be used in conducting the study under the following subheadings:

- Design of the Study
- Population of the Study
- Sample and Sampling Techniques
- Research Instruments
- Validity of the Instruments
- Reliability of the Instruments
- Experimental Procedures
- Method of Data Collection
- Method of Data Analysis

Design of the Study

The study will adopt quasi-experimental design, specifically the pre-test and post-test non-equivalent control group design. The design uses non-randomized groups because the researcher cannot randomly sample and assign his subjects without disrupting the academic programmes of the schools involved in the study.

The variables for this study are: instructional strategies which are collaborative learning strategy and the conventional lecture method (independent variables), academic achievement in clothing maintenance (dependent variables) while sex, age, socio-economic backgrounds (intervening variables). The design over variables is summarized below.

Table 1: Design of the study is shown below

Group	Pretest	Treatment	Posttest
Experimental Group	O ₁	X1	O ₃
Control Group	O ₂	X2	O ₄

Where O₁ = Pre-test measure experimental group

O₂ = Pre-test measure control group

O₃ = Post-test measure experimental group

O₄ = Post-test measure control group

X1= Treatment given to the experimental group using collaborative learning strategies

X3= No new treatment given to the control group (conventional teaching method)

Population of the Study

The population of this study comprised two hundred and four (204) Home Economics students in 2024/2025 academic session. The population of Home Economics students in University of Benin (Uniben) is one hundred and forty three (143) and sixty one (61) in Adeyemi Federal University of Education, situated in Ondo West Local Government Area of Ondo State (see table 2).

Table 2: Population Distributions of Students of Home Economics in the two Federal Institution.

S/N	Names of School	Level	Number of Students
1.	University of Benin (UniBen)	100	56
		200	44
		300	38
		400	05
2.	Adeyemi Federal University of Education, Ondo State	100	39
		200	08
		300	06
		400	08
Total number of Students			204

Source: Heads of Department of Respective Institution, (2025)

Sample and Sampling Techniques

A multistage sampling procedure was adopted to select fifty two 200 level students for the study, comprising 44 students in the experimental group and 8 students in the control group from two Federal Universities in 2024/2025 academic session

Stage 1: Purposive sampling technique was used to select these two (2) Federal Universities in Edo and Ondo State that run same curriculum for the session and have well equipped clothing laboratories.

Stage 2: Purposive sampling technique was used to select one 200 level Intact class from each of the two Universities, because clothing maintenance is being taught at that level.

Stage 3: Census sampling technique was used to select all 200 level students from the two universities.

Stage 4: Random sampling technique was used to assigned each intact class to a group. Students n Adeyemi Federal University of Education, Ondo State were assigned to the control group (Conventional Teaching Method) while those in University of Benin were assigned to the experimental group (Collaborative learning strategy).

Table 3: Distribution of the Sampled 200 level students

Groups	Universities	Male	Female	Total
Experimental Group	University of Benin (Uniben)	07	37	44
Control Group	Adeyemi Federal University of Education Ondo State	00	08	08
Grand total		07	45	52

Source: Office of the Heads of Department of each University, (2025)

Research Instrument

The instruments used in this study are of three categories instructional instrument and achievement test.

The Instructional instruments comprised the scheme of work (Appendix H), lessons plans (Appendix I and J) for both experimental and control group whose content where drawn from the scheme of work specified by the University prospectus.

Measuring instruments included two kinds of assessment instruments. These are the Clothing Maintenance Achievement Test (CMAT) (Appendix B and D) and the respondents parents socio-economic status (Appendix F).

The achievement test to be used for data collection will be Clothing Maintenance Achievement Test (CMAT) (Appendix B and D) a fifty multiple-choice questions with four options (one valid answer and three distractors). This is designed to measure students achievement. The items were developed by the researcher with the aid of textbooks, materials and a generative artificial intelligence, using the six topics in the scheme of work specified by the university prospectus for the experimental group, and following a table of specification based on the levels advanced by Bloom taxonomy. The instrument had two versions pre-test and post-test, The items in the pre-test version were arranged according to the topics of instruction that the students would learn, while the items in the post-test version were rearranged according to the levels they are meant to measure. The responses of the participants were scored following the guides in Appendices for pre-test and post-test, respectively. Each item answered correctly will be scored 1 point, while each item answered wrongly will be scored 0 point. The instrument consist of fifty multiple choice objective test question.

The respondents parents socio-economic status (Appendix F) two sections viz section A and section B. section A sought students background such as sex, name of school, while section B comprises 10 questions. The parental socioeconomic status

consists parents educational level parents occupation, parents residence, number of cars, types of houses, house status, types of equipment, Access to Books/Print Media, types of beds and ways of keeping books.

Validity of the Instrument

The content validity was done in accordance with 200 level clothing maintenance course outline. To ensure the content was adequately represented, the content validity of the Clothing Maintenance Achievement Test (CMAT) items instrument was done ensuring the use of table of specification which is shown in table as shown in (appendix A) that the content areas were adequately represented. It was face validated by the researcher's supervisor, two other experts in Home economics and one Psychometrician from University of Benin, whose corrections were strictly adhered to.

Reliability of the Instruments

Internal consistency reliability was employed to assess the correlation between the items in the test. This involves administering the instrument (CMAT) to twenty (20) Home Economics students in the University of Benin Edo State who were not part of the sample. The responses were collected and analyzed using Kuder Richardson Formula 20 (KR-20 and Cronbach alpha statistical tool to obtain reliability co-efficients of 0.74 and 0.84 respectively of the test items. These indicate that the instrument (CMAT) is highly reliable.

Experimental Procedure

The study will be carried out in four phases as follows:

- Phase 1: Orientation Training Session(A day programme)
- Phase 2: Pre-treatment Assessment (First Week)
- Phase 3: Treatment Package

- Phase 4: Post-treatment Assessment (The Seventh Week)

Phase 1: Orientation Training Session (A day programme)

The researcher will obtain permission from the school authorities in the two Universities concerned for the involvement of the teachers, students and facilities. The researcher will brief the two groups of clothing and textile teachers on the researcher's intended work with the students before the commencement of the treatment. The students in the experimental group will be guided by the researcher using collaborative teaching method as they carried out while those in the control group will be taught directly by the regular teacher using lecture (conventional) method.

Phase 2: Pre-treatment Assessment (First Week): Letter of introduction will be collected from the Department of Home Economics, Vocational and Technical Education, Faculty of Education, University of Benin, Benin City, for the two Universities one will be used for experiment and the other for control groups. A pre-test will be administered to the subjects in the groups i.e experimental and control groups simultaneously, collected and followed immediately by treatment.

Phase 3: Treatment Package: The researcher prepared six weeks lesson notes for the control group using the conventional lecture method and another six weeks lesson notes for the collaborative learning (experimental group) method group. The lesson notes will be used to teach the students for six weeks (weeks 1-6) covering the six selected topics by the researcher. Each group participated in weekly instructional sessions lasting two hours over six consecutive weeks, ensuring consistency in terms of instructional time and content exposure to maintain internal validity (Creswell & Creswell, 2023).

Experimental Group (Collaborative Learning): the students will be grouped into smaller clusters consisting of 5 members per group, as recommended for effective collaborative interactions (Gillies, 2020). At the onset of each lesson, clear learning objectives and group activities will be outlined by the instructor (Researcher). Each member of the group was assigned specific roles, such as group leader, recorder, checker, and presenter, to ensure accountability and active participation (Slavin, 2019).

The instructor facilitated rather than directly taught, guiding students through problem-solving tasks, discussions, practical clothing maintenance demonstrations, and peer-to-peer interactions (Onyebuchi-Igbokwe, 2024). Students engaged in structured collaborative tasks, including practical clothing repair, stain removal techniques, laundry procedures, and garment finishing, fostering shared responsibilities and peer learning (Azonuche, 2024). During sessions, the instructor continuously provided feedback, monitored interactions, addressed misconceptions, and promoted constructive dialogue. At the end of each collaborative activity, groups shared insights with the whole class, allowing students to reflect collectively on their experiences and consolidate their learning (Johnson & Johnson, 2020).

Control Group (Conventional Method): students in the conventional teaching group received instruction predominantly through lecture-based methods. The instructor maintained a traditional role as the primary source of information, employing demonstration techniques, direct explanations, and individual practical assignments without structured group interactions (Pam, 2024).

Phase 4: Post-treatment Assessment (The Seventh Week): Post-test achievement test will be administered to both the experimental and control groups based on what they were previously exposed to. This instrument will be the same instrument used in the

pre-test, though the order of the question items was changed to prevent the possibility of bias introduced by remembering the questions as they were asked six weeks earlier. Changes will be shown to the supervisors and the experts who will validate the instrument before it will be applied for this research study.

Control of Extraneous Variables

In this study, extraneous variables that may affect the findings of the experiment will be controlled as follows

1. **School Curriculum:** the study uses the two schools because they have same curriculum, content and standard of the programme both in same State which could affect the result of the experiment if they don't have similarities.
2. **Initial (group) difference:** Randomization is one of the technologies used to control initial group differences in research studies. However, in this current study, randomization was not done because the class size is small and adequate for the research process. In place of this, an intact class will be used. Thus, to control the initial differences of subjects in these intact classes, t-test and analysis of covariance (ANCOVA) statistical tool were used for data analysis
3. **Researcher's bias:** The manipulation of the mean values of both the experimental and control group to suit what the researcher has in mind will result into experimenter's bias. In order to prevent this bias, the researcher guarded against the manipulation of any mean score either from the experimental group or the control group through a thorough analysis.
4. **Duration of Teaching:** It is the period of lesson for the sub-topics per week. For this study, the period of teaching will be six (6) weeks for both groups and period of two hours (2hours) per week. The first (week 1) and a week after

the treatment (week 7) will be used for Pre-test assessment and Post-test assessment respectively. This will ensure that both groups are taught within the same length of time. If one group has a long period of teaching, the students in that group may be at an advantage over the group in terms of knowledge and skills gain.

5. **Time between pre-test and post-test:** If the time lag between treatment and the post-test is too long, there may be influence of forgetfulness or maturation on Students performance in the post-test. In order to avoid such influence, the post-test will be conducted immediately after the treatment. The short duration will help to control pre-test sensitization as well as minimize the effect of maturation and history.
6. **Teacher variable:** In quasi-experimental study, teacher variable may affect the result of the research. Teacher variable when one teacher is made to teach the experimental group and another to teach the control group with their individual lesson notes. Since no two teachers can have the same knowledge and skills in teaching, one group will likely be at an advantage over the other. To control this variable in this study, both teachers will use the lesson note prepared by the researcher.
7. **Experimental bias:** the researcher will not teach the two groups to avoid bias. The conventional method group will be taught by the regular clothing and textile teacher in the school under the supervision of the researcher while the experimental group was taught by the researcher.
8. **Students' interaction:** Using students in one school for both experimental and control groups could cause students sensitization as their interaction could be

that they are being used for research purpose. The study therefore, chose two intact classes from two different schools.

Method of Data Collection

The direct contact procedure will be adopted for the collection of data in this study.

Procedure:

Pre-test assessment of both experimental and control groups: The Clothing Maintenance Achievement Test (CMAT) will be administered to students in both experimental and control groups, by the researcher and one research assistant in the sampled schools. In each instances, the students are required to attempt all questions for 50 minutes. There response is indicated on the instrument, which will be retrieved upon the completion of the duration of the test marked and scored.

Implementation of collaborative learning strategy for the experimental group, while the control group is taught using conventional g method (traditional method: treatment will be administered on students for a duration of six weeks from week one to six. All the practical session will be held in clothing and textile laboratories in Home Economics department in the respective University

Post-test assessment at seventh week for both groups: The Clothing Maintenance Achievement Test (CMAT) will be given to the two groups in the 7th week as post-test after six weeks periods of instruction. In each instances, the students are required to attempt all questions for 50 minutes. There response is indicated on the instrument, which will be retrieved upon the completion of the duration of the test marked and scored.

Method of Data Analysis

The data collected from the administration of pre-test and post-test will be analyzed using Mean (\bar{X}) and Standard Deviation to answer research questions while covariance (ANCOVA) and t-test will be used to test the null hypothesis at 0.05 level of significance. To test Hypothesis 1, 2 and 3 will be tested using a Paired Samples t-test. Hypothesis 4 will be tested using an Independent Samples t-test. Hypothesis 5, 6 and 7 will be tested using one way Analysis of Covariance (ANCOVA). Finally, Hypothesis 8 will be tested using an Independent Samples t-test. All analyses will be conducted at a 0.05 level of significance. The decision rule for the research question will be on Mean values such that any calculated Mean equal or greater than value of 2.50 will be regarded as agreed or high extent, while any calculated Mean less than 2.50 will be regarded as disagree or low respectively. For each research question, the pre-test and post-test Mean for both the experimental and control group will be compared to determine the group that perform better. For the null hypothesis, the probability (p) value will be used to make decision. When the p-value is less than or equal to 0.05, the null hypothesis will not be accepted, but when p-value is greater than 0.05, the null hypothesis will be retained.

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APPENDIX A

A TABLE OF SPECIFICATION FOR CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT) (PRE-TEST AND POST-TEST)

Week SN	Topic	Remember (K)	Understand (U)	Apply (A)	Analyze (AN)	Evaluate (E)	Total
1	Introduction to Clothing Maintenance & Laundry Processes	1	1	2	2	2	8
2	Laundry Agents & Application Techniques	1	1	2	2	2	8
3	Fibre Types & Care-Label Interpretation	1	1	2	2	2	8
4	Stain-Removal Procedures	1	1	2	2	2	8
5	Simple Garment Repairs (Darning & Patching)	1	1	2	3	2	9
6	Care of Special Garments & Clothing Storage	1	1	2	3	2	9
Cognitive-Level Totals		6	6	12	14	12	50

NB: This table of specification is based on blooms taxonomy of educational objectives.

APPENDIX B

CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT) PRE-TEST SECTION B

Instructions: Answer all questions Each question is followed by four options, letter A D. Choose the best option that corresponds to the best answer by circling the letter which corresponds to the option.

1. What is the first step in the laundry process?
 - a) Stain removal
 - b) Sorting clothes
 - c) Drying clothes
 - d) Ironing
2. Which of the following best explains the term "clothing maintenance"?
 - a) Purchasing expensive clothes
 - b) Regular care to prolong garment lifespan
 - c) Wearing clothes regularly
 - d) Donating old clothes
3. You notice your cotton shirt has a tear. What action will you take first in clothing maintenance?
 - a) Wash it
 - b) Iron it
 - c) Repair it
 - d) Soak it
4. How can regular laundry promote hygiene?
 - a) By reducing odours
 - b) By changing fashion trends
 - c) By improving clothing cost
 - d) By changing fabric texture
5. How would you differentiate between dry-cleaning and hand-washing?
 - a) Cost and convenience
 - b) Fabric type and process
 - c) Water temperature and time
 - d) Bleach quantity used
6. What are the effects of skipping regular clothing maintenance?
 - a) Increases brightness
 - b) Prevents shrinking
 - c) Causes early wear and tear
 - d) Makes clothes waterproof
7. Which laundry method is most suitable for delicate silk fabrics?
 - a) Machine wash
 - b) Boiling
 - c) Dry cleaning
 - d) Scrubbing
8. How would you assess the importance of regular clothing maintenance for personal presentation?
 - a) Slightly important
 - b) Very important
 - c) Not important
 - d) Only needed for school uniforms
9. Which of these is a bleaching agent?
 - a) Soap
 - b) Vinegar
 - c) Hydrogen peroxide
 - d) Conditioner
10. What is the primary function of soap in the laundry process?
 - a) To whiten clothes
 - b) To scent clothes
 - c) To remove dirt
 - d) To soften water
11. A fabric label recommends mild detergent. Which of these would you choose?
 - a) Bleach
 - b) Laundry bar
 - c) Baby laundry liquid
 - d) Industrial powder
12. Which laundry agent would be most effective on greasy stains?
 - a) Cold water
 - b) Vinegar
 - c) Detergent with enzymes
 - d) Fabric softener

13. What distinguishes soap from synthetic detergent?
 - a) Soap lathers more
 - b) Detergent is acidic
 - c) Soap works better in soft water
 - d) Detergent is natural
14. Why should bleaching agents be used carefully?
 - a) They can increase softness
 - b) They might damage color fabrics
 - c) They save time
 - d) They add fragrance
15. Which laundry agent is safest for coloured clothes?
 - a) Bleach
 - b) Mild detergent
 - c) Ammonia
 - d) Strong alkali
16. Evaluate the most environmentally friendly laundry agent.
 - a) Chlorine bleach
 - b) Biodegradable detergent
 - c) Starch
 - d) Harsh alkali
17. Which of these is a natural fibre?
 - a) Nylon
 - b) Polyester
 - c) Wool
 - d) Rayon
18. What does the washing symbol with a cross over it mean?
 - a) Use bleach
 - b) Do not wash
 - c) Tumble dry
 - d) Hand wash only
19. A garment label says "wash at 30°C." What should you do?
 - a) Wash with hot water
 - b) Wash in boiling water
 - c) Wash in warm water
 - d) Wash in cold or lukewarm water
20. Which care instruction is best for wool fabric?
 - a) Machine wash at high speed
 - b) Wash with bleach
 - c) Hand wash with mild detergent
 - d) Soak in hot water overnight
21. How does fibre content affect care instructions?
 - a) Determines colour only
 - b) Indicates washing temperature
 - c) Suggests fibre length
 - d) Shows label brand
22. Why is it important to check care labels before washing clothes?
 - a) To compare prices
 - b) To prevent damage
 - c) To increase wear
 - d) To ensure brightness
23. Which fabric would you recommend for easy maintenance?
 - a) Wool
 - b) Cotton
 - c) Polyester
 - d) Silk
24. Evaluate the importance of fibre identification in clothing care.
 - a) Not important
 - b) Minimally helpful
 - c) Very essential
 - d) Only necessary in fashion
25. What is the first step in removing a fresh stain?
 - a) Dry clean
 - b) Soak in hot water
 - c) Blot the stain
 - d) Iron the fabric
26. Why is it advisable to treat stains immediately?
 - a) To reduce fading
 - b) To ease removal
 - c) To change fabric type
 - d) To increase colour
27. You spilled ink on a shirt. What is the best immediate action?
 - a) Rub the stain
 - b) Apply salt
 - c) Blot with alcohol
 - d) Add perfume
28. Which agent removes protein stains like blood?
 - a) Cold water and detergent
 - b) Hot water
 - c) Oil-based remover
 - d) Acid

29. How does stain type affect removal method?
- Some stains are colorful
 - Each stain needs a specific method
 - All stains require bleach
 - Stains can be ignored
30. What is the difference between chemical and natural stain removers?
- Natural agents always bleach
 - Chemical agents are gentle
 - Natural agents are eco-friendly
 - Chemical agents leave no residue
31. Which stain remover is best for environmental safety?
- Chlorine bleach
 - Acetone
 - Lemon juice and baking soda
 - Industrial solvent
32. Assess the effectiveness of soaking versus scrubbing in stain removal.
- Scrubbing is always better
 - Soaking is better for set-in stains
 - Scrubbing works for all fibres
 - Soaking weakens fabrics
33. What is darning?
- Removing stains
 - Mending holes using stitches
 - Washing delicate fabrics
 - Ironing clothes
34. What is the purpose of patching?
- To change fashion
 - To cover holes or tears
 - To bleach clothes
 - To adjust colour
35. Your shirt has a small hole. What simple repair method can be applied?
- Ironing
 - Scrubbing
 - Darning
 - Stretching
36. A large tear in denim is best repaired by:
- Drying
 - Soaking
 - Patching
 - Folding
37. How does fabric type influence repair method?
- All fabrics can be darned
 - Stretch fabrics need patches
 - Woven fabrics patch better
 - Fabric type does not matter
38. What makes a repair aesthetically pleasing?
- Large visible stitches
 - Matching thread and neatness
 - Using bright colours
 - Ironing the repair
39. Why is patch placement important?
- To increase weight
 - To make patch visible
 - To maintain garment shape
 - To add bleach
40. Assess the durability of darning versus patching.
- Patching is always better
 - Darning is stronger
 - Depends on tear size and location
 - Both are equally weak
41. What criteria determine a successful garment repair?
- Colour contrast
 - Fashion label
 - Functionality and appearance
 - Brand of thread used
42. Which item is a special garment?
- Cotton T-shirt
 - Wool suit
 - Nylon socks
 - Denim trousers
43. What is the main reason for proper clothing storage?
- To decorate a room
 - To change colour
 - To prevent damage
 - To increase cost
44. How would you store a wool coat during rainy season?
- Fold in airtight bag
 - Hang in cool, dry place
 - Soak in water
 - Leave on floor
45. Which storage method suits delicate silk garments?
- Hanging with padded hangers
 - Folding tightly
 - Stuffing in drawers
 - Hanging with wire
46. How does climate affect clothing storage?
- Cold weather shrinks fabric
 - Humidity causes mildew
 - Hot air preserves colour
 - Dry air bleaches colour

47. What makes mothballs effective in storage?
 - a) Their smell repels insects
 - b) They clean garments
 - c) They absorb moisture
 - d) They bleach clothes
48. Why are padded hangers used for suits and jackets?
 - a) To stretch fabric
 - b) To support shape
 - c) To add fragrance
 - d) To reduce dust
49. Evaluate the importance of separating seasonal garments.
 - a) It creates disorder
 - b) It saves money
 - c) It prolongs garment life
 - d) It wastes time
50. What is the most important consideration in storing clothes long-term?
 - a) Fold size
 - b) Temperature control
 - c) Colour
 - d) Fashion trends

APPENDIX C

CLOTHIING MAINTENANCE ACHIEVEMENT TEST (CMAT) MARKING SCHEME PRE-TEST

- 1. B 26. B
- 2. B 27. C
- 3. C 28. A
- 4. A 29. B
- 5. B 30. C
- 6. C 31. C
- 7. C 32. B
- 8. B 33. B
- 9. C 34. B
- 10. C 35. C
- 11. C 36. C
- 12. C 37. C
- 13. C 38. B
- 14. B 39. C
- 15. B 40. C
- 16. B 41. C
- 17. C 42. B
- 18. B 43. C
- 19. D 44. B
- 20. C 45. A
- 21. B 46. B
- 22. B 47. A
- 23. C 48. B
- 24. C 49. C
- 25. C 50. B

APPENDIX D

CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT) POST-TEST

Instructions: Answer all questions. Each question is followed by four options, letter A D. Choose the best option that corresponds to the best answer by circling the letter which corresponds to the option.

1. What is the most important consideration in storing clothes long-term?
 - a. Fold size
 - b. Temperature control
 - c. Colour
 - d. Fashion trends
2. Evaluate the importance of separating seasonal garments.
 - a. It creates disorder
 - b. It saves money
 - c. It prolongs garment life
 - d. It wastes time
3. Why are padded hangers used for suits and jackets?
 - a. To stretch fabric
 - b. To support shape
 - c. To add fragrance
 - d. To reduce dust
4. What makes mothballs effective in storage?
 - a. Their smell repels insects
 - b. They clean garments
 - c. They absorb moisture
 - d. They bleach clothes
5. How does climate affect clothing storage?
 - a. Cold weather shrinks fabric
 - b. Humidity causes mildew
 - c. Hot air preserves colour
 - d. Dry air bleaches colour
6. What is the most important consideration in storing clothes long-term?
 - a. Fold size
 - b. Temperature control
 - c. Colour
 - d. Fashion trends
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 - a. It creates disorder
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 - c. It prolongs garment life
 - d. It wastes time
8. Why is patch placement important?
 - a. To increase weight
 - b. To make patch visible
 - c. To maintain garment shape
 - d. To add bleach
9. What makes a repair aesthetically pleasing?
 - a. Large visible stitches
 - b. Matching thread and neatness
 - c. Using bright colours
 - d. Ironing the repair
10. How does fabric type influence repair method?
 - a. All fabrics can be darned
 - b. Stretch fabrics need patches
 - c. Woven fabrics patch better
 - d. Fabric type does not matter
11. A large tear in denim is best repaired by:
 - a. Drying
 - b. Soaking
 - c. Patching
 - d. Folding
12. Your shirt has a small hole. What simple repair method can be applied?
 - a. Ironing
 - b. Scrubbing
 - c. Darning
 - d. Stretching
13. What makes a repair aesthetically pleasing?
 - a. Large visible stitches
 - b. Matching thread and neatness
 - c. Using bright colours
 - d. Ironing the repair

14. How does fabric type influence repair method?
 - a. All fabrics can be darned
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 - c. Darning
 - d. Stretching
17. What is the purpose of patching?
 - a. To change fashion
 - b. To cover holes or tears
 - c. To bleach clothes
 - d. To adjust colour
18. What is darning?
 - a. Removing stains
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 - c. Washing delicate fabrics
 - d. Ironing clothes
19. Assess the effectiveness of soaking versus scrubbing in stain removal.
 - a. Scrubbing is always better
 - b. Soaking is better for set-in stains
 - c. Scrubbing works for all fibres
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20. stain remover is best for environmental safety?
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 - d. To increase colour
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 - c. Blot the stain
 - d. Iron the fabric

27. Evaluate the importance of fibre identification in clothing care.
- Not important
 - Minimally helpful
 - Very essential
 - Only necessary in fashion
28. Which fabric would you recommend for easy maintenance?
- Wool
 - Cotton
 - Polyester
 - Silk
29. Why is it important to check care labels before washing clothes?
- To compare prices
 - To prevent damage
 - To increase wear
 - To ensure brightness
30. How does fibre content affect care instructions?
- Determines colour only
 - Indicates washing temperature
 - Suggests fibre length
 - Shows label brand
31. Which care instruction is best for wool fabric?
- Machine wash at high speed
 - Wash with bleach
 - Hand wash with mild detergent
 - Soak in hot water overnight
32. A garment label says “wash at 30°C.” What should you do?
- Wash with hot water
 - Wash in boiling water
 - Wash in warm water
 - Wash in cold or lukewarm water
33. What does the washing symbol with a cross over it mean?
- Use bleach
 - Do not wash
 - Tumble dry
 - Hand wash only
34. Which of these is a natural fibre?
- Nylon
 - Polyester
 - Wool
 - Rayon
35. Evaluate the most environmentally friendly laundry agent.
- Chlorine bleach
 - Biodegradable detergent
 - Starch
 - Harsh alkali
36. Which laundry agent is safest for coloured clothes?
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 - Mild detergent
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37. Why should bleaching agents be used carefully?
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 - They save time
 - They add fragrance
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 - Detergent is natural
39. Which laundry agent would be most effective on greasy stains?
- Cold water
 - Vinegar
 - Detergent with enzymes
 - Fabric softener

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 - Baby laundry liquid
 - Industrial powder
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 - To scent clothes
 - To remove dirt
 - To soften water
42. Which of these is a bleaching agent?
- Soap
 - Vinegar
 - Hydrogen peroxide
 - Conditioner
43. How would you assess the importance of regular clothing maintenance for personal presentation?
- Slightly important
 - Very important
 - Not important
 - Only needed for school uniforms
44. Which laundry method is most suitable for delicate silk fabrics?
- Machine wash
 - Boiling
 - Dry cleaning
 - Scrubbing
45. What are the effects of skipping regular clothing maintenance?
- Increases brightness
 - Prevents shrinking
 - Causes early wear and tear
 - Makes clothes waterproof
46. How would you differentiate between dry-cleaning and hand-washing?
- Cost and convenience
 - Fabric type and process
 - Water temperature and time
 - Bleach quantity used
47. How can regular laundry promote hygiene?
- By reducing odours
 - By changing fashion trends
 - By improving clothing cost
 - By changing fabric texture
48. You notice your cotton shirt has a tear. What action will you take first in clothing maintenance?
- Wash it
 - Iron it
 - Repair it
 - Soak it
49. Which of the following best explains the term "clothing maintenance"?
- Purchasing expensive clothes
 - Regular care to prolong garment lifespan
 - Wearing clothes regularly
 - Donating old clothes
50. What is the first step in the laundry process?
- Stain removal
 - Sorting clothes
 - Drying clothes
 - Ironing

APPENDIX E

CLOTHIING MAINTENANCE ACHIEVEMENT TEST (CMAT) MARKING SCHEME POST-TEST

- 1. B 26. C
- 2. C 27. C
- 3. B 28. C
- 4. A 29. B
- 5. B 30. B
- 6. A 31. C
- 7. B 32. D
- 8. C 33. B
- 9. B 34. C
- 10. C 35. B
- 11. C 36. B
- 12. C 37. B
- 13. B 38. C
- 14. C 39. C
- 15. C 40. C
- 16. C 41. C
- 17. B 42. C
- 18. B 43. B
- 19. B 44. C
- 20. C 45. C
- 21. C 46. B
- 22. B 47. A
- 23. A 48. C
- 24. C 49. B
- 25. B 50. B

APPENDIX F

RESPONDENTS' BIO DATA AND PARENTS' SOCIO-ECONOMIC STATUS (SES)

SECTION: A STUDENTS BIO DATA

NAME OF SCHOOL:-----

MALE: () FEMALE: ()

AGE: Age: 15-17 [] 18-20 [] 21-23 [] 24 above []

SECTION B: PARENTS' SOCIO-ECONOMIC STATUS (SES)

Instruction: Please tick [✓] the option that best describes you sincerely.

1. **Father's/ Male Guardian Highest Educational Qualification:**

No Formal Education [] Primary School living certificate/ teacher training []

Secondary School [] NCE/OND/Graduate []

2. **Mother's/ Female Guardian Highest Educational Qualification:**

No Formal Education [] Primary School living certificate/ teacher training []

Secondary School [] NCE/OND/Graduate []

3. **How many cars do your parents have?**

None [] 1-2 [] 3-4 [] 5 above []

4. **Which type of house do you live in?**

Self-contained room [] Two-bedroom flat [] Three-bedroom flat [] Duplex or Bungalow) []

5. **How many children are in your household?**

2 [] 3 [] 4 [] 5 above []

6. **How often do your parents give you money?**

Monthly [] weekly [] Daily [] Rarely none []

7. **What type of fuel do you usually use for food preparation in your house?**

Kerosene [] Gas [] firewood [] charcoal []

8. **How often do your parents shop for food?**

Everyday [] once a week [] once a month [] None []

9. **How often do you go to bed hungry?**

Everyday [] once a week [] once a month [] None []

10. **Which meal are you likely to skip?**

Breakfast [] lunch [] Dinner [] None []

APPENDIX G

COURSE OUTLINE TOPICS PER WEEK

Week	Topic
1	Introduction to Clothing Maintenance & Laundry Processes
2	Laundry Agents & Application Techniques
3	Fibre Types and Interpretation of Care Labels
4	Stain Removal Procedures
5	Simple Garment Repairs (Darning and Patching)
6	Care of Special Garments & Clothing Storage

APPENDIX H

GENERAL SCHEME OF WORK

Week	Topic	Content Overview	Teaching Duration
Week 1	Introduction to Clothing Maintenance & Laundry Processes	<ul style="list-style-type: none"> • Significance of clothing maintenance in personal hygiene, budgeting, and sustainability • Overview of laundry processes: handwashing, machine washing, dry cleaning • Laundry equipment: types, uses, and safety • Basic steps of laundering: sorting, soaking, washing, rinsing, drying, ironing, airing, folding • Common mistakes and how to avoid them 	2 hours
Week 2	Laundry Agents & Application Techniques	<ul style="list-style-type: none"> • Types and functions of laundry agents: detergents (soap-based, synthetic), bleaches (chlorine, oxygen-based), fabric softeners, stain removers, fabric rinses, stiffening agents • Effects on different fabric types and human skin • Storage and safe handling of chemicals • Guidelines for selecting suitable agents 	2 hours
Week 3	Fibre Types and Interpretation of Care Labels	<ul style="list-style-type: none"> • Classification of textile fibres: natural (cotton, wool, silk, linen) vs. synthetic (nylon, polyester, acrylic) • Characteristics influencing cleaning methods • How to interpret and apply care label instructions • Preventing fabric damage during laundering 	2 hours
Week 4	Stain Removal Procedures	<ul style="list-style-type: none"> • Common household stains and their classification • Mechanisms of stain removal • Types of stain removers and proper application • Factors influencing effectiveness: type of stain, fabric, reaction time, temperature • Demonstration of removal methods 	2 hours
Week 5	Simple Garment Repairs (Darning and Patching)	<ul style="list-style-type: none"> • The role of repairs in extending garment life • Tools and materials: needles, threads, sewing machines, thimbles, scissors • Repair techniques: torn seams, missing buttons, frayed hems, stuck zippers • Darning (manual vs. machine), patching (iron-on vs. sewn-in) • Introduction to hand-sewing vs. machine-sewing techniques • Health and safety practices 	2 hours
Week 6	Care of Special Garments & Clothing Storage	<ul style="list-style-type: none"> • Handling delicate and ceremonial clothing (e.g., uniforms, lace, silk, wool) • Best practices in clothing storage: folding vs. hanging, padding, cataloguing • Use of protective aids: mothballs, camphor, cedar blocks, breathable bags • Conditions for optimal storage: temperature, light, humidity • Sustainable clothing care and eco-conscious storage solutions 	2 hours

APPENDIX I

LESSON PLAN FOR THE COLLABORATIVE LEARNING STRATEGY (EXPERIMENTAL GROUP)

COLLABORATIVE LEARNING STRATEGIES USED

Strategy Name	Brief Description
Peer Instruction Learning	Students work in pairs/small groups to discuss concepts, solve problems, or teach each other.
Think-Pair-Share	Individual reflection, followed by paired discussion, then sharing with the larger group.
Jigsaw	Each group member becomes an 'expert' on one piece of information and teaches it to their 'home' group.
Group Projects	Teams collaborate on a complex task over an extended period, often involving multiple skills and roles.
Case Studies	engage in activities mimicking real-world situations.
Role-Playing	Students act out roles relevant to professional situations to practice interactions and skills.

WEEK 1 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance`

Level: 200-Level Undergraduate

Topic: Introduction to Clothing Maintenance and Laundry Processes

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Think-Pair-Share, Group Discussion)

General Objective: Introduce students to the importance of clothing maintenance, types of laundry processes, basic laundering steps, and common laundering mistakes.

Specific Objectives: By the end of the lesson, students should be able to:

1. Explain the significance of clothing maintenance for personal hygiene, budgeting, and sustainability.
2. Identify different types of laundry processes.
3. Outline the basic steps involved in laundering clothes.
4. Mention common laundering mistakes and how to avoid them.

Instructional Materials:

- Whiteboard and markers Samples of detergent and soap Laundry equipment (pictures or real items: washing machine, iron, basin, pegs) Charts showing laundry steps

INSTRUCTIONAL PROCEDURE WEEK 1

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Clothing Maintenance	Facilitates entry by asking <i>Think-Pair-Share</i> question: "Why do we need to care for our clothes?" Moves around listening and prompting shy students to share.	Think individually, pair up with a neighbor, share their ideas with the class.	Think-Pair-Share	10 minutes
2	Importance of Clothing Maintenance	Forms groups. Assigns each group a heading: Hygiene, Budgeting, or Sustainability. Facilitates brainstorming by prompting groups ("How does maintenance save money?").	Discuss their assigned topic, write points, and prepare a 2-minute presentation.	Group Discussion	15 minutes
3	Types of Laundry Processes	Displays pictures/samples of washing equipment. Assigns each group one laundry process (handwashing, machine washing, dry cleaning). Moves between groups, guiding discussions with questions ("Where is handwashing preferable?").	Observe samples, define assigned process, give examples, and share findings.	Group Discussion	20 minutes
4	Basic Steps in Laundering	Writes mixed laundry steps on board. Groups rearrange the steps correctly. Teacher facilitates by guiding ("What should come before washing?").	Collaborate to sequence laundry steps properly and explain reasons during presentation.	Group Discussion	20 minutes
5	Common Laundering Mistakes	Provides each group with mistake scenarios (e.g., "white cloths stained after washing"). Facilitates by encouraging problem-solving ("What went wrong? How could it be avoided?").	Discuss mistakes, suggest corrections, and present briefly.	Group Discussion	20 minutes
6	Summary and Review	Facilitates a class quick <i>Think-Pair-Share</i> : "What is the first and most important step before laundering clothes?" Moves around encouraging all pairs to contribute.	Think individually, pair up, share with the class, correct each other.	Think-Pair-Share	25 minutes
7	Assignment	Assignment: "List three laundering mistakes made at home and suggest two ways to correct them." Clarifies expectations, answers questions.	Note down assignment and prepare examples from home.	Individual Reinforcement	5 minutes

WEEK 2 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Laundry Agents, Application Techniques, and Soap Making

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Group Investigation, Peer Teaching, Think-Pair-Share)

General Objective: Expose students to different types of laundry agents, their applications, effects on fabrics and skin, and basic traditional soap-making techniques.

Specific Objectives: By the end of the lesson, students should be able to:

1. Identify different types of laundry agents.
2. Classify laundry agents and state their functions.
3. Explain effects of laundry agents on fabrics and skin.
4. Describe safety measures for handling laundry chemicals.
5. Outline basic steps involved in traditional soap-making.

Instructional Materials:

- Samples or pictures of detergents, bleaches, softeners, stain removers, stiffening agents, Whiteboard and markers, Charts illustrating soap-making process, Measuring cups, vegetable oil, caustic soda (sealed), gloves (for visual demonstration)

INSTRUCTIONAL PROCEDURE WEEK 2

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Laundry Agents	Welcomes students. Leads <i>Think-Pair-Share</i> question: "What different products do you or your family use when washing clothes?" Walks around prompting those not responding.	Think individually, pair up, discuss different laundry products, share experiences.	Think-Pair-Share	10 minutes
2	Identification and Classification of Laundry Agents	Divides class into 4-5 groups. Gives each group samples or pictures (detergents, bleaches, softeners, etc.). Facilitates by prompting: "What is this agent for? How is it different from others?"	Collaboratively observe, identify, classify the agents, and record findings.	Group Investigation	20 minutes
3	Functions and Effects of Laundry Agents	Each group selects two agents and discusses their effects on fabric and skin. Teacher monitors and prompts with questions: "What happens if too much bleach is used? How does detergent affect silk?"	Discuss functions and harmful effects of assigned agents, prepare group notes.	Group Discussion	20 minutes
4	Safe Handling of Laundry Chemicals	Assigns each group a safety topic (e.g., storage, handling bleach, protective gear). Facilitates by moving among groups, asking: "Why is safety gear important here?"	Research and discuss best practices for assigned safety topic, prepare to teach others.	Peer Teaching	20 minutes

5	Basic Steps of Traditional Soap Making	Shows simplified soap-making chart. Asks each group to pick one step (e.g., measuring oil, adding caustic soda) and explain its importance. Facilitates critical thinking by questioning group reasoning.	Study assigned step, discuss its importance, and peer-teach the class.	Peer Teaching	25 minutes
6	Summary and Review	Facilitates final <i>Think-Pair-Share</i> : "Mention one laundry agent and one important safety tip when using it." Walks around encouraging fast sharing. Groups also answer quick review questions posed randomly.	Reflect individually, pair up, share summary answers with class.	Think-Pair-Share	15 minutes
7	Assignment	Assignment: "Research and describe one traditional soap-making method practiced in your locality. State materials and safety precautions." Explains clearly and clarifies doubts.	Note down assignment, plan home research.	Individual Reinforcement	5 minutes

WEEK 3 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Fibre Types and Interpretation of Care Labels

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Jigsaw, Think-Pair-Share)

General Objective: Educate students on how textile fibre types and care labels influence laundering techniques and fabric care.

Specific Objectives: By the end of the lesson, students should be able to:

1. Classify textile fibres into natural and synthetic.
2. Describe characteristics of different fibre types.
3. Match fibre types with appropriate laundering methods.
4. Interpret common care label symbols correctly.
5. Identify ways to prevent fabric damage during laundering.

Instructional Materials:

- Fabric samples (cotton, wool, silk, polyester, nylon, acrylic)
- Care label charts/posters
- Garment labels (real examples)
- Whiteboard and markers, Posters showing recommended laundry technique

INSTRUCTIONAL PROCEDURE WEEK 3

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Fibre Types and Care Labels	Facilitates by posing a <i>Think-Pair-Share</i> question: "Are all clothes washed the same way? Why?" Circulates among students, encouraging them to discuss and share examples.	Reflect individually, pair with a neighbor, share ideas with class.	Think-Pair-Share	10 minutes
2	Classification of Textile Fibres	Forms small groups. Distributes fabric samples. Guides exploration by prompting: "Feel the texture does this feel natural or synthetic?" Moves among groups, supporting classification.	Observe, touch, classify samples into natural or synthetic categories collaboratively.	Group Discussion	20 minutes
3	Characteristics and Laundering Techniques	Assigns each group a fabric type (e.g., cotton, silk, wool, polyester). Facilitates discussion by asking guiding questions: "What happens when wool meets hot water?"	Research assigned fibre's characteristics and best laundering methods; prepare brief peer-teaching notes.	Group Discussion + Peer Teaching	25 minutes
4	Interpretation of Care Labels	Distributes different garment care labels. Guides groups using <i>Jigsaw</i> strategy: each group masters 2–3 symbols and prepares to teach others. Monitors and prompts deeper decoding ("What does the crossed triangle mean?").	Decode assigned care label symbols collaboratively; peer-teach other groups.	Jigsaw Strategy	30 minutes
5	Preventing Fabric Damage	Presents laundering mistake scenarios (e.g., "Washed wool sweater shrank."). Facilitates discussion: "What mistake was made? How could it have been prevented?"	Collaboratively diagnose mistakes and suggest preventive care measures.	Group Discussion	15 minutes
6	Summary and Review	Facilitates final <i>Think-Pair-Share</i> : "Before washing any garment, what two things must you check?" Moves among students encouraging fast sharing and correcting minor misconceptions.	Think individually, discuss in pairs, share with class; summarize major points.	Think-Pair-Share	15 minutes
7	Assignment	Assignment: "Collect two clothing care labels from home. Identify the fibre type, interpret all symbols, and state the correct laundering method." Explains expectations clearly.	Note assignment and prepare for home practical observation.	Individual Reinforcement	5 minutes

WEEK 4 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Stain Removal Procedures

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Group Problem Solving, Peer Teaching, Think-Pair-Share)

General Objective: To enable students to understand different types of stains, the appropriate stain removers, and the correct methods for effective stain removal from fabrics.

Specific Objectives: By the end of the lesson, students should be able to:

1. Define and identify common types of stains.
2. Classify stain-removing agents.
3. Match specific stains with appropriate removal methods.
4. Explain factors that affect stain removal (time, fabric type, temperature).
5. Describe step-by-step procedures for safe and effective stain removal.

Instructional Materials:

- Samples or images of stained fabrics, Stain removers (enzyme-based, solvent-based, natural agents like vinegar, lemon, baking soda)
- Whiteboard and markers, Stain removal procedure charts/guides, Cloth, sponge, water (optional demonstration setup)

INSTRUCTIONAL PROCEDURE WEEK 4

S t e p	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Stains	Facilitates a <i>Think-Pair-Share</i> prompt: "Have you ever stained your clothes? What caused it?" Moves among pairs encouraging participation and noting stain examples on board.	Reflect individually, pair with neighbor, share their experiences.	Think-Pair-Share	10 minutes
2	Definition and Types of Stains	Presents samples or pictures of common stains (ink, grease, blood, grass). Groups observe and categorize stains as protein-based, oil-based, tannin-based, dye-based. Facilitates classification by prompting group discussions: "Is ink a dye-based stain or oil-based?"	Examine samples/images, discuss and classify stains in groups.	Group Problem Solving	20 minutes

3	Classification of Stain Removers	Assigns each group a set of stain removers (e.g., enzymes, solvents, vinegar). Facilitates by prompting: "Which remover suits a protein stain? Which for grease?" Supports groups to prepare peer mini-lessons.	Research assigned remover type, link it to stain type, prepare to teach classmates.	Peer Teaching	20 minutes
4	Factors Affecting Stain Removal	Presents stain case studies (e.g., "Blood stain left overnight", "Grease on polyester fabric"). Facilitates group problem-solving discussions with questions like: "What factors made removal harder here?"	Discuss in groups, identify time, temperature, and fabric factors affecting stain removal.	Group Discussion	20 minutes
5	Stain Removal Procedures	Distributes a simple stain removal chart. Guides groups to re-order jumbled steps for stain treatment (identify, test, blot, apply remover, rinse, dry). Facilitates corrections by asking: "Should we rinse before applying remover?"	Reconstruct correct stain removal steps collaboratively. Present sequences to class.	Group Problem Solving	25 minutes
6	Summary and Review	Facilitates final <i>Think-Pair-Share</i> : "What's the first thing you must do when treating a stain?" and short oral Q&A across groups. Corrects and reinforces key steps.	Reflect individually, pair up, share summaries, participate in Q&A.	Think-Pair-Share	15 minutes
7	Assignment	Assignment: "Identify two stains on your clothes, describe the type, remover used (or to be used), and removal steps taken." Clarifies expectations and answers questions.	Record assignment and prepare home observation report.	Individual Reinforcement	5 minutes

WEEK 5 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Simple Garment Repairs (Darning and Patching)

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Group Demonstration, Peer Coaching, Think-Pair-Share)

General Objective: To equip students with practical knowledge and skills to carry out basic garment repairs using hand-sewing and machine-sewing techniques.

Specific Objectives: By the end of the lesson, students should be able to:

1. Explain the importance of garment repair.
2. Identify basic repair tools and materials.
3. Describe and demonstrate techniques for darning and patching.

4. Differentiate between hand-sewing and machine-sewing methods.
5. Apply safety precautions during garment repair activities.

Instructional Materials:

- Needles, threads, scissors, sewing machine (if available)
- Samples of iron-on patches and fabric scraps
- Torn garments or damaged fabric samples
- Thimbles, pin cushions, measuring tapes
- Whiteboard and markers

INSTRUCTIONAL PROCEDURE WEEK 5

S t e p	Content	Teacher’s Activities	Students’ Activities	Collaborative Strategy	Time
1	Introduction to Garment Repairs	Facilitates <i>Think-Pair-Share</i> discussion: "Have you or someone at home ever repaired torn clothes? What methods were used?" Walks around, prompting more ideas and writing keywords on board.	Reflect individually, pair up, share examples of garment repairs done at home.	Think-Pair-Share	10 minutes
2	Importance of Garment Repairs	Forms small groups. Assigns task: "List reasons why repairing garments is important for personal finance, environment, and garment lifespan." Facilitates brainstorming by asking: "How does repair help the environment?"	Discuss reasons collaboratively and write points for brief class sharing.	Group Discussion	15 minutes
3	Tools and Materials for Repair	Shows real tools/samples. Distributes pictures or samples to groups. Facilitates exploration by asking: "Which tool is used to protect your finger while sewing?"	Observe samples, identify repair tools collaboratively, and relate tools to their uses.	Group Investigation	15 minutes
4	Techniques of Darning and Patching	Demonstrates basic darning and patching techniques briefly. Then assigns each group either "Darning" or "Patching" to replicate using fabric samples. Facilitates group practice, moving from group to group offering correction and encouragement.	Watch demonstration attentively, practice either darning or patching as assigned within groups.	Group Demonstration	30 minutes
5	Hand-Sewing vs Machine-Sewing	Facilitates class discussion: "Which is better for repairs — hand sewing or machine sewing? Why?" Prompts groups to consider speed, neatness, accessibility. Groups debate and present their conclusions.	Discuss in groups, list pros/cons of both methods, and share conclusions.	Group Discussion	20 minutes
6	Safety Precautions During Repair	Groups are assigned safety tips to discuss (e.g., "Safe way to hold needles", "Why use a thimble"). Teacher facilitates with additional guiding questions ("What	Discuss and present safety precautions collaboratively.	Peer Coaching	20 minutes

		accidents could occur if these precautions are ignored?”).			
7	Summary and Review	Facilitates closing <i>Think-Pair-Share</i> : "Mention two important tools for darning and why they are needed." Also asks oral review questions to wrap up.	Reflect individually, pair and share answers, participate in final review.	Think-Pair-Share	10 minutes
8	Assignment	Assignment: "Find an old garment at home. Identify damage and describe how you would repair it using either darning or patching. Bring to next class if possible."	Note down assignment and plan home task.	Individual Reinforcement	5 minutes

WEEK 6 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Care of Special Garments and Clothing Storage

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Group Investigation, Think-Pair-Share, Peer Teaching)

General Objective: To teach students the appropriate handling of delicate garments and effective storage techniques to maintain garment quality over time.

Specific Objectives: By the end of the lesson, students should be able to:

1. Identify special garments and delicate fabrics requiring extra care.
2. Describe correct handling and cleaning techniques for these garments.
3. Explain the importance of proper clothing storage.
4. List and describe various clothing storage tools and aids.
5. Recommend suitable environmental conditions and sustainable practices for clothing storage.

Instructional Materials:

- Examples or images of special garments (lace, silk, wool, ceremonial uniforms)
- Clothing storage aids (mothballs, camphor balls, cedar blocks, padded hangers, breathable bags)
- Posters or diagrams showing correct storage methods
- Whiteboard and markers
- Wardrobe layout illustrations (optional)

INSTRUCTIONAL PROCEDURE WEEK 6

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Special Garments	Facilitates <i>Think-Pair-Share</i> : "Have you ever owned or handled delicate garments like lace, silk, or uniforms? What special care was needed?" Moves around, prompting sharing.	Reflect individually, pair up, share experiences with delicate garments.	Think-Pair-Share	10 minutes
2	Identifying Special Garments	Divides class into groups. Distributes images or real samples. Facilitates by asking: "What makes this garment delicate? What risks are associated with it?"	Observe garments or images, classify into categories based on delicacy, and discuss risk factors collaboratively.	Group Investigation	20 minutes
3	Handling and Care Techniques	Assigns each group a delicate garment type (e.g., silk, wool, lace). Facilitates research and discussion: "How should this garment be washed, dried, ironed?" Guides groups to prepare peer-teaching demonstrations.	Research and collaboratively prepare handling and care instructions for their assigned garment; teach classmates.	Peer Teaching	25 minutes
4	Storage Tools and Aids	Shows real samples or pictures of storage aids (padded hangers, cedar blocks, breathable bags). Facilitates brainstorming: "Which aid would you use for wool?"	Discuss, match storage aids to garment types, and explain best use practices within groups.	Group Investigation	20 minutes
5	Ideal Storage Conditions and Sustainability	Facilitates scenario-based discussion: "Imagine storing clothes in a hot, humid place. What problems might arise?" Guides groups to list environmental risks and propose sustainable alternatives (e.g., breathable bags instead of plastic).	Discuss scenarios in groups, brainstorm and present sustainable storage solutions.	Group Problem Solving	25 minutes
6	Summary and Review	Facilitates final <i>Think-Pair-Share</i> : "What is the most important factor when storing wool garments?" Encourages all pairs to contribute quick reflections.	Reflect individually, pair up, share final summaries and participate in class-wide review.	Think-Pair-Share	15 minutes
7	Assignment	Assignment: "Inspect how clothes are stored at home. Write a short report suggesting three improvements based on today's lesson." Explains expectations clearly.	Note assignment and plan home observation.	Individual Reinforcement	5 minutes

WEEK SEVEN

At the end of the whole exercise, a post-test will be administered by the researcher and research assistant to the students to ascertain the effect of the treatment on their level of understanding of the content for this study

APPENDIX J

LESSON PLAN FOR CONVENTIONAL TEACHING METHOD (CONTROL GROUP)

WEEK 1: Introduction to Clothing Maintenance and Laundry Processes

Specific Objectives: At the end of the lesson, students should be able to:

- i. Explain the significance of clothing maintenance for personal hygiene, budgeting, and sustainability.
- ii. Identify different types of laundry processes.
- iii. Outline the basic steps involved in laundering clothes.
- iv. Mention common laundering mistakes and how to avoid them.

Previous Knowledge: Students have prior understanding of basic home hygiene practices and caring for personal items.

Instructional Materials: Whiteboard and markers, Samples of detergent and soap Laundry equipment (pictures or real items: washing machine, iron, basin, pegs), Charts showing laundry steps

Reference: Anyakoha, E.U. (2015). *Clothing and Textiles*. Oseni, D.O. (2013). *Clothing and Textiles*.

Entry Behavior: Students have experience washing simple items at home and using soap and water for cleaning.

Instructional Procedure

Step	Content	Teacher Activities	Students Activities	Lecture Method	Time
1	Introduction to Clothing Maintenance	Teacher introduces the topic by discussing the importance of clothing maintenance for health, economy, and environmental care.	Students listen actively and contribute ideas based on their experiences.	Lecture Method	10 minutes
2	Types of Laundry Processes	Teacher explains the three major laundry processes: handwashing, machine washing, and dry cleaning, using visual aids.	Students observe pictures or real objects; take notes and ask questions for clarification.	Lecture Method	20 minutes
3	Basic Steps of Laundering	Teacher outlines the sequence of laundering: sorting, soaking, washing, rinsing, drying, ironing, airing, and folding. Teacher explains each step clearly.	Students take down notes, identify the steps, and ask clarifying questions.	Lecture Method	20 minutes
4	Common Laundering Mistakes	Teacher highlights common mistakes (e.g., wrong sorting, wrong detergent choice, improper drying) and their consequences on garment lifespan.	Students listen, ask questions, and mention any personal laundering mistakes they have experienced.	Lecture Method	15 minutes
5	Practical Demonstration with Sample Materials	Teacher briefly demonstrates sorting clothes using fabric samples and matching detergents to appropriate fabric types.	Students observe and participate by suggesting proper matching during demonstration.	Lecture Method	25 minutes
6	Summary and Review	Teacher summarizes the main points on the importance of clothing maintenance, types of laundry	Students answer review questions orally and summarize key points.	Lecture Method	10 minutes

		processes, and basic laundering steps.			
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Assignment: Students should list three mistakes commonly made during laundering at home and suggest two ways to correct them. (To be discussed in the next class.)

WEEK 2: Laundry Agents, Application Techniques, and Soap Making

Specific Objectives: At the end of the lesson, students should be able to:

- i. Identify different types of laundry agents.
- ii. State the functions and effects of laundry agents on fabrics and skin.
- iii. Explain safety measures when handling laundry chemicals.
- iv. Describe the basic steps involved in traditional soap making.

Previous Knowledge: Students are familiar with household cleaning products and general hygiene practices.

Instructional Materials: Samples of detergents, bleaches, fabric softeners, stain removers, stiffening agents. Measuring cups, vegetable oil, caustic soda (safely packed), gloves, bowls, charts on soap-making process.

Reference: Anyakoha, E.U. (2015). *Clothing and Textiles*. Kadolph, S.J. (2010). *Textiles (11th Edition)*. Oseni, D.O. (2013). *Clothing and Textiles*.

Entry Behavior: Students have been introduced to the importance of clothing maintenance in personal hygiene and economy.

Instructional Procedure

S t e p	Content	Teacher Activities	Students Activities	Lecture Method	Time
1	Introduction to Laundry Agents	Teacher revises previous knowledge briefly and introduces laundry agents.	Students listen attentively and answer review questions.	Lecture Method	10 minutes
2	Types and Functions of Laundry Agents	Teacher explains the types (detergents, bleaches, softeners, stain removers, stiffeners), showing samples and discussing uses.	Students observe samples, take notes, and ask clarifying questions.	Lecture Method	20 minutes
3	Effects of Laundry Agents on Fabrics and Skin	Teacher describes effects on different fabric types and possible skin reactions. Highlights proper handling precautions.	Students take notes and participate by sharing personal experiences with laundry agents.	Lecture Method	15 minutes
4	Introduction to Basic Soap Making	Teacher introduces traditional soap making; lists ingredients (oil, caustic soda, water) and explains cold process soap making steps using charts or prepared videos/samples.	Students listen carefully, write soap-making steps in notebooks, and ask questions.	Lecture Method	20 minutes
5	Safe Handling of Chemicals	Teacher stresses chemical safety, showing protective gear, and discussing accident prevention.	Students discuss safety rules and contribute examples of good handling	Lecture Method	10 minutes

			practices.		
6	Summary and Review	Teacher summarizes main points: types and functions of laundry agents, effects on fabrics and skin, basic soap-making steps. Reviews learning through quick oral questions.	Students answer questions orally; recap learning points in pairs.	Lecture Method	5 minutes

Assignment:

- Students are to research and describe any local traditional soap-making method known to them.
- Students should also bring a piece of traditional or commercial soap to the next class for observation.

WEEK 3: Fibre Types and Interpretation of Care Labels

Specific Objectives: At the end of the lesson, students should be able to:

- Classify textile fibres into natural and synthetic categories.
- State the characteristics of fibres that influence laundering methods.
- Interpret care labels and symbols correctly.
- Explain how to prevent fabric damage during laundering.

Previous Knowledge: Students are familiar with different types of clothing materials from their daily experience.

Instructional Materials: Fabric samples (cotton, wool, silk, polyester, nylon, acrylic), Care labels charts/posters, Washing instruction tags from garments, Whiteboard and markers

Reference: Kadolph, S.J. (2010). *Textiles (11th Edition)*. Anyakoha, E.U. (2015). *Clothing and Textiles*. Fairhurst, C. (2008). *Textiles and Fashion: Materials, Design and Technology*.

Entry Behavior: Students have worn different types of clothes and may have noticed washing instructions or care labels on garments.

Instructional Procedure

S t e p	Content	Teacher Activities	Students Activities	Lecture Method	Time
1	Introduction to Fibres	Teacher introduces the lesson by asking students to name different fabrics they know (cotton, silk, polyester, etc.).	Students respond by listing known fabrics orally.	Lecture Method	10 minutes
2	Classification of Fibres	Teacher explains classification into natural fibres (cotton, wool, silk, linen) and synthetic fibres (nylon, polyester, acrylic). Describes characteristics influencing washing (e.g., shrinkage, heat sensitivity).	Students listen, take down notes, and ask clarification questions.	Lecture Method	20 minutes
3	Interpretation of Care	Teacher shows sample care labels and explains the meaning of common	Students observe, copy care symbols into	Lecture Method	30 minutes

	Labels	symbols (washing, bleaching, drying, ironing, dry-cleaning symbols). Uses charts or real garment labels.	notebooks, and interpret sample labels with guidance.		
4	Preventing Fabric Damage	Teacher explains how wrong laundering methods (wrong temperature, wrong agent, wrong drying) damage different fabrics. Gives practical examples.	Students listen carefully, ask questions, and suggest precautions based on fabric types.	Lecture Method	20 minutes
5	Summary and Review	Teacher summarizes fibre types, characteristics, importance of following care labels, and ways to avoid fabric damage. Conducts quick oral Q&A.	Students answer review questions orally and complete a short exercise on matching care symbols to fabrics.	Lecture Method	10 minutes

Assignment: Students should find two clothing care labels at home, copy them into their notebooks, and state the fibre type associated with each label.

WEEK 4: Stain Removal Procedures

Specific Objectives: At the end of the lesson, students should be able to:

- i. Identify different types of stains and classify them accordingly.
- ii. Explain the principles behind stain removal.
- iii. List the types of stain removers and their correct applications.
- iv. Demonstrate understanding of factors affecting stain removal.

Previous Knowledge: Students are familiar with everyday experiences of getting stains on clothing and trying simple methods to remove them.

Instructional Materials: Stain removal agents (sample removers like lemon, vinegar, detergent, bleach), Stained fabric samples, Water, bowls, washing equipment, Whiteboard and markers, Charts illustrating stain removal steps

Reference: Anyakoha, E.U. (2015). *Clothing and Textiles.*, Oseni, D.O. (2013). *Clothing and Textiles.*

Entry Behavior: Students have seen stained clothes at home and may have attempted washing or stain treatment.

Instructional Procedure

Step	Content	Teacher Activities	Students Activities	Lecture Method	Time
1	Introduction to Stains	Teacher introduces the topic by asking students to mention examples of common stains (e.g., ink, oil, blood, grass).	Students list known types of stains based on experience.	Lecture Method	10 minutes
2	Types and Classification of Stains	Teacher explains different types of stains: protein stains, tannin stains, oily stains, dye stains. Classifies them into groups.	Students take down notes and ask questions for clarification.	Lecture Method	20 minutes
3	Principles and Mechanism of Stain Removal	Teacher describes stain removal principles (e.g., dissolving like with like, reaction time, temperature	Students observe demonstration, record notes, and discuss reasons why some	Lecture Method	25 minutes

		control). Demonstrates basic stain removal using simple examples.	stains are harder to remove.		
4	Types of Stain Removers and Proper Application	Teacher lists types of stain removers (enzymatic, solvent-based, oxygen-based) and when to use each based on stain type and fabric sensitivity.	Students listen attentively, copy key points, and ask clarifying questions.	Lecture Method	20 minutes
5	Factors Affecting Stain Removal	Teacher explains factors: type of fabric, type of stain, age of stain, reaction time, temperature. Gives practical examples.	Students identify examples from experience (e.g., old ink stains, quick removal of fresh stains).	Lecture Method	15 minutes
6	Summary and Review	Teacher summarizes key points: types of stains, removers, and important stain removal principles. Conducts quick oral questions and recaps.	Students answer orally and write a brief note summarizing factors affecting stain removal.	Lecture Method	10 minutes

Assignment: Students are to practice removing one household stain from a small fabric piece and record the method, materials used, and result. They will present their report in the next class.

WEEK 5: Simple Garment Repairs (Darning and Patching)

Specific Objectives: At the end of the lesson, students should be able to:

- i. State the importance of repairing garments.
- ii. Identify tools and materials needed for simple garment repairs.
- iii. Describe basic darning and patching techniques.
- iv. Differentiate between hand-sewing and machine-sewing methods.

Previous Knowledge: Students have basic experience with threading needles or sewing buttons either at home or during previous school activities.

Instructional Materials: Needles, threads, scissors, sewing machine (or picture demonstration), thimble, fabric swatches, Torn garments (or pre-damaged fabric samples), Samples of patches (iron-on and sewn patches)

Reference: Anyakoha, E.U. (2015). *Clothing and Textiles*, Oseni, D.O. (2013). *Clothing and Textiles*.

Entry Behavior: Students have seen or assisted in minor sewing or garment mending at home.

Instructional Procedure

S t	Content	Teacher Activities	Students Activities	Lecture Method	Time
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e	p				
1	Introduction to Garment Repairs	Teacher introduces the topic by explaining the importance of garment repairs for sustainability and economy.	Students listen and share examples of clothes they or their families have repaired before.	Lecture Method	10 minutes
2	Tools and Materials for Repairs	Teacher lists and explains the use of essential tools: needles, thread, scissors, thimbles, sewing machine, iron-on patches.	Students observe samples and record notes; ask about unfamiliar tools.	Lecture Method	15 minutes
3	Darning Techniques	Teacher explains darning and demonstrates manual darning techniques using a simple torn fabric. Teacher also describes machine darning verbally if sewing machines are not available.	Students observe carefully, take notes, and ask clarification questions.	Lecture Method	25 minutes
4	Patching Techniques	Teacher demonstrates patching methods: iron-on patches and sewn-in patches. Explains differences and best uses.	Students observe and note steps; ask questions during demonstration.	Lecture Method	20 minutes
5	Hand-sewing vs Machine-sewing	Teacher compares hand and machine sewing, listing advantages and disadvantages of each method, especially for repairs.	Students listen, take notes, and discuss when hand-sewing might be preferred over machine sewing.	Lecture Method	20 minutes
6	Summary and Review	Teacher summarizes garment repair tools, darning and patching techniques, and sewing methods. Conducts short oral Q&A session.	Students answer oral questions and summarize key points in pairs.	Lecture Method	10 minutes

Assignment: Students are to practice repairing a torn seam on any old garment at home. They should record the method used and bring the garment for display next class.

WEEK 6: Care of Special Garments and Clothing Storage

Specific Objectives: At the end of the lesson, students should be able to:

- i. Identify special garments and delicate fabrics that require special care.
- ii. Describe best practices for handling and storing delicate garments.
- iii. List protective aids used in garment storage.
- iv. Explain the ideal environmental conditions for proper clothing storage.

Previous Knowledge: Students have basic understanding of general clothing maintenance from previous classes.

Instructional Materials: Samples or images of special garments (lace, silk, wool, ceremonial clothes, uniforms), Examples of storage aids (garment bags, mothballs, camphor balls, cedar blocks, breathable storage bags), Diagrams of wardrobe layout and folding techniques, Whiteboard and markers

Reference: Anyakoha, E.U. (2015). *Clothing and Textiles*, Oseni, D.O. (2013). *Clothing and Textiles*.

Entry Behavior: Students have basic experience folding and storing their everyday clothing at home.

Instructional Procedure

S t e p	Content	Teacher Activities	Students Activities	Lecture Method	Time
1	Introduction to Special Garments	Teacher introduces the topic by discussing examples of delicate and ceremonial garments needing extra care.	Students list and describe delicate garments they know.	Lecture Method	10 minutes
2	Handling of Delicate Garments	Teacher explains precautions when handling delicate fabrics (gentle washing, padding, minimal ironing, proper drying). Gives real-life examples.	Students take notes and suggest ways they have cared for delicate clothes.	Lecture Method	20 minutes
3	Best Storage Practices	Teacher discusses proper storage methods: folding vs hanging, padding with tissue, using breathable garment bags. Demonstrates folding techniques where possible.	Students observe folding demonstration, copy notes, and participate by folding sample garments if available.	Lecture Method	25 minutes
4	Use of Protective Storage Aids	Teacher lists and explains the use of mothballs, camphor, cedar blocks, silica gels, and breathable fabric bags for clothing preservation.	Students observe, handle storage aids, and ask questions.	Lecture Method	15 minutes
5	Environmental Conditions for Storage	Teacher explains ideal conditions: cool temperature, low humidity, minimal light exposure. Warns about mildew and insect infestations.	Students listen, record notes, and relate points to household experiences.	Lecture Method	20 minutes
6	Summary and Review	Teacher summarizes handling and storage techniques and emphasizes sustainable practices. Conducts oral questions for quick review.	Students respond orally and prepare questions for clarification.	Lecture Method	10 minutes

Assignment:

Students are to design a simple home plan for storing delicate garments, indicating materials, storage aids to be used, and the environmental conditions to maintain.

WEEK SEVEN

At the end of the whole exercise, a post-test will be administered by the researcher and research assistant to the students to ascertain the effect of the treatment on their level of understanding of the content for this study

APPENDIX J

VALIDATION OF RESEARCH INSTRUMENTS

Validation by Project Supervisor

Department of Vocational and Technical Education,
University of Benin, Benin City,
June 4, 2025.

Dr. I. Iheselechies
Dept of Home Economics Education
Faculty of Vocational & Technical Education
Uniba

Dear Sir/Ma

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENTS

I, Wasini Veronica AIDAN PG/EDU2110657 am a master degree candidate in above named department. Hereby write to solicit for your assistance with the validation of the research instruments to be used in my ongoing research titled "*Effect of Collaborative Learning Strategy on Academic Achievement in Clothing Maintenance among Home Economics Education Undergraduates in Edo State*".

Kindly help ensure the:

1. ~~Construct~~ validity of the following instruments to be used as treatment in the study:
 - Scheme of work
 - Collaborative and conventional lesson plans.You are required to check if the instruments are adequate
2. ~~Face and content~~ validity of the two instrument for data collection. You are required to check if the items are adequate to measure the domains of learning they are intended for, and that the question items in the instruments are properly written and cover the learning contents to which the learners shall be exposed.

Information about the purpose questions hypotheses design and instruments for the study are also provided.

Thank you in anticipation of your favourable disposition to this request.

Yours faithfully

Waff
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Purpose of the Study

The main purpose of this study is to determine the effect of collaborative learning strategy on academic achievement in clothing maintenance among Home Economics Education undergraduates in Edo state. Specifically, the study seeks to determine:

1. The mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method.
2. The difference in the posttest achievement scores of students exposed to Collaborative Learning Strategy and those exposed to the Conventional Lecture Method in Clothing Maintenance.
3. The difference in academic achievement scores between male and female students taught Clothing Maintenance using Collaborative Learning Strategy.
4. The difference in academic achievement scores between male and female students taught Clothing Maintenance using the Conventional Lecture Method.
5. The interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance.

Separate for each group

Research Questions

The following research questions were formulated to guide this study

1. What are the mean pretest and posttest achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method among Home Economics undergraduate in Edo State?
2. What is the difference between the academic achievement posttest scores of students exposed to Collaborative Learning Strategy and those exposed to the Conventional Lecture Method in Clothing Maintenance among Home Economics undergraduate in Edo State?
3. What is the difference in the academic achievement scores of male and female students taught Clothing Maintenance using Collaborative Learning Strategy?
4. What is the difference in the academic achievement scores of male and female students taught Clothing Maintenance using the Conventional Lecture Method among Home Economics undergraduate in Edo State?

5. What is the interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance among Home Economics undergraduate in Edo State?

Hypotheses

The following null hypotheses will guide the study and will be tested at 0.05 level of significance:

1. There is no significant difference between the mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method.
2. There is no significant difference in the posttest academic achievement scores of students taught Clothing Maintenance using Collaborative Learning Strategy and those taught using Conventional Lecture Method in Clothing Maintenance.
3. There is no significant difference in the academic achievement scores of male and female students taught Clothing Maintenance using Collaborative Learning Strategy.
4. There is no significant difference in the academic achievement scores of male and female students taught Clothing Maintenance using the Conventional Lecture Method.
5. There is no significant interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance.

Design of the Study

The study will adopt quasi-experimental design, specifically the pre-test and post-test non-equivalent control group design. According to Reichardt and Abraham, (2023) the design uses non-randomized groups and this occurs when the researcher cannot randomly sample and assign his subjects without disrupting the academic programmes of the schools involved in the study. The researcher therefore has to use subject groups (intact class) already in existence such as organized classes, but with different instructional design. One class will serve as the experimental group (where students will be taught clothing maintenance using collaborative learning strategy), and the other as the control group (where the students will be taught clothing maintenance using conventional method).

Specifically, the design of the study is shown below

Group	Pretest	Treatment	Posttest
Experimental Group	O1 O_1	X1 X_1	O2 O_2
Control Group	O1 O_1	X2 X_2	O2 O_2

Where O_1 = Pre-test for both experimental group and control group

O_2 = Post-test for both experimental group and control group

X_1 = Treatment given to the experimental group using collaborative learning strategies

X_2 = No new treatment given to the control group (conventional teaching method)

Research Instrument

The instruments used in this study are of two categories instructional instrument and achievement test.

The *Instructional instruments* comprised the scheme of work, lessons plans for both experimental and control group whose content were drawn from the scheme of work specified by the university prospectus.

The *achievement test* to be used for data collection will be Clothing Maintenance Achievement Test (CMAT) a fifty multiple-choice questions with four options (one valid answer and three distractors). This is designed to measure students achievement. The items were developed by the researcher with the aid of textbooks, materials and a generative artificial intelligence, using the six topics in the scheme of work specified by the university prospectus for the experimental group, and following a table of specification based on the levels advanced by Bloom taxonomy. The instrument had two versions pre-test and post-test, The items in the pre-test version were arranged according to the topics of instruction that the students would learn, while the items in the post-test version were rearranged according to the levels they are meant to measure. The responses of the participants were scored following the guides in Appendices for pre-test and post-test, respectively. Each item answered correctly will be scored 1 point, while each item answered wrongly will be scored 0 point.

The instrument consist of two sections viz section A and section B. section A sought students background such as sex, name of school, while section B consist of fifty multiple choice objective test question.

APPENDIX A

CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT)

SECTION A Students Bio Data

NAME OF SCHOOL:

MALE: () FEMALE: ()

SECTION B

Instructions: Answer all questions on the answer sheet provided. Each question is followed by four options, letter A D. Choose the best option that corresponds to the best answer by cycling the letter which corresponds to the option

1. What is the first step in the laundry process?
 - a) Stain removal
 - b) Sorting clothes
 - c) Drying clothes
 - d) Ironing
2. Which of the following best explains the term "clothing maintenance"?
 - a) Purchasing expensive clothes
 - b) Regular care to prolong garment lifespan
 - c) Wearing clothes regularly
 - d) Donating old clothes
3. You notice your cotton shirt has a tear. What action will you take first in clothing maintenance?
 - a) Wash it
 - b) Iron it
 - c) Repair it
 - d) Soak it
4. How can regular laundry promote hygiene?
 - a) By reducing odours
 - b) By changing fashion trends
 - c) By improving clothing cost
 - d) By changing fabric texture
5. How would you differentiate between dry-cleaning and hand-washing?
 - a) Cost and convenience
 - b) Fabric type and process
 - c) Water temperature and time
 - d) Bleach quantity used
6. What are the effects of skipping regular clothing maintenance?
 - a) Increases brightness
 - b) Prevents shrinking
 - c) Causes early wear and tear
 - d) Makes clothes waterproof
7. Which laundry method is most suitable for delicate silk fabrics?
 - a) Machine wash
 - b) Boiling
 - c) Dry cleaning
 - d) Scrubbing
8. How would you assess the importance of regular clothing maintenance for personal presentation?
 - a) Slightly important
 - b) Very important
 - c) Not important
 - d) Only needed for school uniforms
9. Which of these is a bleaching agent?
 - a) Soap
 - b) Vinegar
 - c) Hydrogen peroxide
 - d) Conditioner
10. What is the primary function of soap in the laundry process?
 - a) To whiten clothes
 - b) To scent clothes
 - c) To remove dirt
 - d) To soften water
11. A fabric label recommends mild detergent. Which of these would you choose?
 - a) Bleach
 - b) Laundry bar
 - c) Baby laundry liquid
 - d) Industrial powder
12. Which laundry agent would be most effective on greasy stains?
 - a) Cold water
 - b) Vinegar
 - c) Detergent with enzymes
 - d) Fabric softener

13. What distinguishes soap from synthetic detergent?
- Soap lathers more
 - Detergent is acidic
 - Soap works better in soft water
 - Detergent is natural
14. Why should bleaching agents be used carefully?
- They can increase softness
 - They might damage color fabrics
 - They save time
 - They add fragrance
15. Which laundry agent is safest for coloured clothes?
- Bleach
 - Mild detergent
 - Ammonia
 - Strong alkali
16. Evaluate the most environmentally friendly laundry agent.
- Chlorine bleach
 - Biodegradable detergent
 - Starch
 - Harsh alkali
17. Which of these is a natural fibre?
- Nylon
 - Polyester
 - Wool
 - Rayon
18. What does the washing symbol with a cross over it mean?
- Use bleach
 - Do not wash
 - Tumble dry
 - Hand wash only
19. A garment label says "wash at 30°C." What should you do?
- Wash with hot water
 - Wash in boiling water
 - Wash in warm water
 - Wash in cold or lukewarm water
20. Which care instruction is best for wool fabric?
- Machine wash at high speed
 - Wash with bleach
 - Hand wash with mild detergent
 - Soak in hot water overnight
21. How does fibre content affect care instructions?
- Determines colour only
 - Indicates washing temperature
 - Suggests fibre length
 - Shows label brand
22. Why is it important to check care labels before washing clothes?
- To compare prices
 - To prevent damage
 - To increase wear
 - To ensure brightness
23. Which fabric would you recommend for easy maintenance?
- Wool
 - Cotton
 - Polyester
 - Silk
24. Evaluate the importance of fibre identification in clothing care.
- Not important
 - Minimally helpful
 - Very essential
 - Only necessary in fashion
25. What is the first step in removing a fresh stain?
- Dry clean
 - Soak in hot water
 - Blot the stain
 - Iron the fabric
26. (U) Why is it advisable to treat stains immediately?
- To reduce fading
 - To ease removal
 - To change fabric type
 - To increase colour
27. You spilled ink on a shirt. What is the best immediate action?
- Rub the stain
 - Apply salt
 - Blot with alcohol
 - Add perfume
28. Which agent removes protein stains like blood?
- Cold water and detergent
 - Hot water
 - Oil-based remover
 - Acid
29. How does stain type affect removal
38. What makes a repair aesthetically

- method?
- a) Some stains are colorful
 - b) Each stain needs a specific method
 - c) All stains require bleach
 - d) Stains can be ignored
30. What is the difference between chemical and natural stain removers?
 - a) Natural agents always bleach
 - b) Chemical agents are gentle
 - c) Natural agents are eco-friendly
 - d) Chemical agents leave no residue
 31. Which stain remover is best for environmental safety?
 - a) Chlorine bleach
 - b) Acetone
 - c) Lemon juice and baking soda
 - d) Industrial solvent
 32. Assess the effectiveness of soaking versus scrubbing in stain removal.
 - a) Scrubbing is always better
 - b) Soaking is better for set-in stains
 - c) Scrubbing works for all fibres
 - d) Soaking weakens fabrics
 33. What is darning?
 - a) Removing stains
 - b) Mending holes using stitches
 - c) Washing delicate fabrics
 - d) Ironing clothes
 34. What is the purpose of patching?
 - a) To change fashion
 - b) To cover holes or tears
 - c) To bleach clothes
 - d) To adjust colour
 35. Your shirt has a small hole. What simple repair method can be applied?
 - a) Ironing
 - b) Scrubbing
 - c) Darning
 - d) Stretching
 36. A large tear in denim is best repaired by:
 - a) Drying
 - b) Soaking
 - c) Patching
 - d) Folding
 37. How does fabric type influence repair method?
 - a) All fabrics can be darned
 - b) Stretch fabrics need patches
 - c) Woven fabrics patch better
 - d) Fabric type does not matter
- pleasing?
- a) Large visible stitches
 - b) Matching thread and neatness
 - c) Using bright colours
 - d) Ironing the repair
39. Why is patch placement important?
 - a) To increase weight
 - b) To make patch visible
 - c) To maintain garment shape
 - d) To add bleach
 40. Assess the durability of darning versus patching.
 - a) Patching is always better
 - b) Darning is stronger
 - c) Depends on tear size and location
 - d) Both are equally weak
 41. What criteria determine a successful garment repair?
 - a) Colour contrast
 - b) Fashion label
 - c) Functionality and appearance
 - d) Brand of thread used
 42. Which item is a special garment?
 - a) Cotton T-shirt
 - b) Wool suit
 - c) Nylon socks
 - d) Denim trousers
 43. What is the main reason for proper clothing storage?
 - a) To decorate a room
 - b) To change colour
 - c) To prevent damage
 - d) To increase cost
 44. How would you store a wool coat during rainy season?
 - a) Fold in airtight bag
 - b) Hang in cool, dry place
 - c) Soak in water
 - d) Leave on floor
 45. Which storage method suits delicate silk garments?
 - a) Hanging with padded hangers
 - b) Folding tightly
 - c) Stuffing in drawers
 - d) Hanging with wire
 46. How does climate affect clothing storage?
 - a) Cold weather shrinks fabric
 - b) Humidity causes mildew
 - c) Hot air preserves colour
 - d) Dry air bleaches colour

47. What makes mothballs effective in storage?
 - a) Their smell repels insects
 - b) They clean garments
 - c) They absorb moisture
 - d) They bleach clothes
48. Why are padded hangers used for suits and jackets?
 - a) To stretch fabric
 - b) To support shape
 - c) To add fragrance
 - d) To reduce dust
49. Evaluate the importance of separating seasonal garments.
 - a) It creates disorder
 - b) It saves money
 - c) It prolongs garment life
 - d) It wastes time
50. What is the most important consideration in storing clothes long-term?
 - a) Fold size
 - b) Temperature control
 - c) Colour
 - d) Fashion trends

APPENDIX B

CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT) MARKING SCHEME

- 1. B 26. B
- 2. B 27. C
- 3. C 28. A
- 4. A 29. B
- 5. B 30. C
- 6. C 31. C
- 7. C 32. B
- 8. B 33. B
- 9. C 34. B
- 10. C 35. C
- 11. C 36. C
- 12. C 37. C
- 13. C 38. B
- 14. B 39. C
- 15. B 40. C
- 16. B 41. C
- 17. C 42. B
- 18. B 43. C
- 19. D 44. B
- 20. C 45. A
- 21. B 46. B
- 22. B 47. A
- 23. C 48. B
- 24. C 49. C
- 25. C 50. B

*Validated,
Dr. Husein
~~H.~~*

Validation by Home Economics Education Experts

Department of Vocational and Technical Education,
University of Benin, Benin City,
June 4, 2025.

Prof. E. E. Uko Aviomoh

Dept of Home Economics Education

Faculty of Vocational & Technical Education

Dear Sir/Ma

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENTS

I, Wasini Veronica AIDAN (PG/EDU2110657) ^{in the} a master degree candidate ^{in the} in above named Department. ^{Research} Hereby write to solicit for your assistance with the validation of the research instruments to be used in my ongoing research titled "*Effect of Collaborative Learning Strategy on Academic Achievement in Clothing Maintenance among Home Economics Education Undergraduates in Edo State*".

Kindly help ensure that:

*change from full
stop to comma*

1. Construct validity of the following instruments to be used as treatment in the study:

- Scheme of work
- Collaborative and conventional lesson plans.

You are required to check if the instruments are adequate

2. Face and content validity of the two instrument for data collection. You are required to check if the items are adequate to measure the domains of learning they are intended for, and that the question items in the instruments are properly written and cover the learning contents to which the learners shall be exposed.

Information about the purpose questions hypotheses design and instruments for the study are also provided.

Thank you in anticipation of your favourable disposition to this request.

Yours faithfully,

WVF

Wasini Veronica AIDAN
+2348137903695
Wasini.aidan@edu.uniben.edu

GENERAL SCHEME OF WORK

Week	Topic	Content Overview	Teaching Duration
Week 1	Introduction to Clothing Maintenance & Laundry Processes	<ul style="list-style-type: none"> • Significance of clothing maintenance in personal hygiene, budgeting, and sustainability • Overview of laundry processes: handwashing, machine washing, dry cleaning • Laundry equipment: types, uses, and safety • Basic steps of laundering: sorting, soaking, washing, rinsing, drying, ironing, airing, folding • Common mistakes and how to avoid them 	2 hours
Week 2	Laundry Agents & Application Techniques	<ul style="list-style-type: none"> • Types and functions of laundry agents: detergents (soap-based, synthetic), bleaches (chlorine, oxygen-based), fabric softeners, stain removers, fabric rinses, stiffening agents • Effects on different fabric types and human skin • Storage and safe handling of chemicals • Guidelines for selecting suitable agents 	2 hours
Week 3	Fibre Types and Interpretation of Care Labels	<ul style="list-style-type: none"> • Classification of textile fibres: natural (cotton, wool, silk, linen) vs. synthetic (nylon, polyester, acrylic) • Characteristics influencing cleaning methods • How to interpret and apply care label instructions • Preventing fabric damage during laundering 	2 hours
Week 4	Stain Removal Procedures	<ul style="list-style-type: none"> • Common household stains and their classification • Mechanisms of stain removal • Types of stain removers and proper application • Factors influencing effectiveness: type of stain, fabric, reaction time, temperature • Demonstration of removal methods 	2 hours
Week 5	Simple Garment Repairs (Darning and Patching)	<ul style="list-style-type: none"> • The role of repairs in extending garment life • Tools and materials: needles, threads, sewing machines, thimbles, scissors • Repair techniques: torn seams, missing buttons, frayed hems, stuck zippers • Darning (manual vs. machine), patching (iron-on vs. sewn-in) • Introduction to hand-sewing vs. machine-sewing techniques • Health and safety practices 	2 hours
Week 6	Care of Special Garments & Clothing Storage	<ul style="list-style-type: none"> • Handling delicate and ceremonial clothing (e.g., uniforms, lace, silk, wool) • Best practices in clothing storage: folding vs. hanging, padding, cataloguing • Use of protective aids: mothballs, camphor, cedar blocks, breathable bags • Conditions for optimal storage: temperature, light, humidity • Sustainable clothing care and eco-conscious storage solutions 	2 hours

**LESSON PLAN FOR THE COLLABORATIVE LEARNING STRATEGY
(EXPERIMENTAL GROUP)**

COLLABORATIVE LEARNING STRATEGIES USED

Strategy Name	Brief Description
Peer Instruction Learning	Students work in pairs/small groups to discuss concepts, solve problems, or teach each other.
Think-Pair-Share	Individual reflection, followed by paired discussion, then sharing with the larger group.
Jigsaw	Each group member becomes an 'expert' on one piece of information and teaches it to their 'home' group.
Group Projects	Teams collaborate on a complex task over an extended period, often involving multiple skills and roles.
Case Studies	engage in activities mimicking real-world situations.
Role-Playing	Students act out roles relevant to professional situations to practice interactions and skills.

WEEK 1 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Introduction to Clothing Maintenance and Laundry Processes

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Think-Pair-Share, Group Discussion)

General Objective: Introduce students to the importance of clothing maintenance, types of laundry processes, basic laundering steps, and common laundering mistakes.

Specific Objectives: By the end of the lesson, students should be able to:

1. Explain the significance of clothing maintenance for personal hygiene, budgeting, and sustainability.
2. Identify different types of laundry processes.
3. Outline the basic steps involved in laundering clothes.
4. Mention common laundering mistakes and how to avoid them.

Instructional Materials:

- Whiteboard and markers
- Samples of detergent and soap
- Laundry equipment (pictures or real items: washing machine, iron, basin, pegs)
- Charts showing laundry steps

**LESSON PLAN FOR THE COLLABORATIVE LEARNING STRATEGY
(EXPERIMENTAL GROUP)**

COLLABORATIVE LEARNING STRATEGIES USED

Strategy Name	Brief Description
Peer Instruction Learning	Students work in pairs/small groups to discuss concepts, solve problems, or teach each other.
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Group Projects	Teams collaborate on a complex task over an extended period, often involving multiple skills and roles.
Case Studies	engage in activities mimicking real-world situations.
Role-Playing	Students act out roles relevant to professional situations to practice interactions and skills.

WEEK 1 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Introduction to Clothing Maintenance and Laundry Processes

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Think-Pair-Share, Group Discussion)

General Objective: Introduce students to the importance of clothing maintenance, types of laundry processes, basic laundering steps, and common laundering mistakes.

Specific Objectives: By the end of the lesson, students should be able to:

1. Explain the significance of clothing maintenance for personal hygiene, budgeting, and sustainability.
2. Identify different types of laundry processes.
3. Outline the basic steps involved in laundering clothes.
4. Mention common laundering mistakes and how to avoid them.

Instructional Materials:

- Whiteboard and markers
- Samples of detergent and soap
- Laundry equipment (pictures or real items: washing machine, iron, basin, pegs)
- Charts showing laundry steps

INSTRUCTIONAL PROCEDURE WEEK 1

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Clothing Maintenance	Facilitates entry by asking <i>Think-Pair-Share</i> question: "Why do we need to care for our clothes?" Moves around listening and prompting shy students to share.	Think individually, pair up with a neighbor, share their ideas with the class.	Think-Pair-Share	10 minutes
2	Importance of Clothing Maintenance	Forms groups. Assigns each group a heading: Hygiene, Budgeting, or Sustainability. Facilitates brainstorming by prompting groups ("How does maintenance save money?").	Discuss their assigned topic, write points, and prepare a 2-minute presentation.	Group Discussion	15 minutes
3	Types of Laundry Processes	Displays pictures/samples of washing equipment. Assigns each group one laundry process (handwashing, machine washing, dry cleaning). Moves between groups, guiding discussions with questions ("Where is handwashing preferable?").	Observe samples, define assigned process, give examples, and share findings.	Group Discussion	20 minutes
4	Basic Steps in Laundering	Writes mixed laundry steps on board. Groups rearrange the steps correctly. Teacher facilitates by guiding ("What should come before washing?").	Collaborate to sequence laundry steps properly and explain reasons during presentation.	Group Discussion	20 minutes
5	Common Laundering Mistakes	Provides each group with mistake scenarios (e.g., "white cloths stained after washing"). Facilitates by encouraging problem-solving ("What went wrong? How could it be avoided?").	Discuss mistakes, suggest corrections, and present briefly.	Group Discussion	20 minutes
6	Summary and Review	Facilitates a class quick <i>Think-Pair-Share</i> : "What is the first and most important step before laundering clothes?" Moves around encouraging all pairs to contribute.	Think individually, pair up, share with the class, correct each other.	Think-Pair-Share	25 minutes
7	Assignment	Assignment: "List three laundering mistakes made at home and suggest two ways to correct them." Clarifies expectations, answers questions.	Note down assignment and prepare examples from home.	Individual Reinforcement	5 minutes

25 mins to sequence the steps (numbers) without writing

WEEK 6 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Care of Special Garments and Clothing Storage

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Group Investigation, Think-Pair-Share, Peer Teaching)

General Objective: To teach students the appropriate handling of delicate garments and effective storage techniques to maintain garment quality over time.

Specific Objectives: By the end of the lesson, students should be able to:

1. Identify special garments and delicate fabrics requiring extra care.
2. Describe correct handling and cleaning techniques for these garments.
3. Explain the importance of proper clothing storage.
4. List and describe various clothing storage tools and aids.
5. Recommend suitable environmental conditions and sustainable practices for clothing storage.

Instructional Materials:

- Examples or images of special garments (lace, silk, wool, ceremonial uniforms)
- Clothing storage aids (mothballs, camphor balls, cedar blocks, padded hangers, breathable bags)
- Posters or diagrams showing correct storage methods
- Whiteboard and markers
- Wardrobe layout illustrations (optional)

INSTRUCTIONAL PROCEDURE WEEK 6

Step	Content	Teacher's Activities	Students' Activities	Collaborative Strategy	Time
1	Introduction to Special Garments	Facilitates <i>Think-Pair-Share</i> : "Have you ever owned or handled delicate garments like lace, silk, or uniforms? What special care was needed?" Moves around, prompting sharing.	Reflect individually, pair up, share experiences with delicate garments.	Think-Pair-Share	10 minutes
2	Identifying Special Garments	Divides class into groups. Distributes images or real samples. Facilitates by asking: "What makes this garment delicate? What risks are associated with it?"	Observe garments or images, classify into categories based on delicacy, and discuss risk factors collaboratively.	Group Investigation	20 minutes
3	Handling and Care Techniques	Assigns each group a delicate garment type (e.g., silk, wool, lace). Facilitates research and discussion: "How should this garment be washed, dried, ironed?" Guides groups to prepare peer-teaching demonstrations.	Research and collaboratively prepare handling and care instructions for their assigned garment; teach classmates.	Peer Teaching	25 minutes
4	Storage Tools and Aids	Shows real samples or pictures of storage aids (padded hangers, cedar blocks, breathable bags). Facilitates brainstorming: "Which aid would you use for wool?"	Discuss, match storage aids to garment types, and explain best use practices within groups.	Group Investigation	20 minutes
5	Ideal Storage Conditions and Sustainability	Facilitates scenario-based discussion: "Imagine storing clothes in a hot, humid place. What problems might arise?" Guides groups to list environmental risks and propose sustainable alternatives (e.g., breathable bags instead of plastic).	Discuss scenarios in groups, brainstorm and present sustainable storage solutions.	Group Problem Solving	25 minutes
6	Summary and Review	Facilitates final <i>Think-Pair-Share</i> : "What is the most important factor when storing wool garments?" Encourages all pairs to contribute quick reflections.	Reflect individually, pair up, share final summaries and participate in class-wide review.	Think-Pair-Share	15 minutes
7	Assignment	Assignment: "Inspect how clothes are stored at home. Write a short report suggesting three improvements based on today's lesson." Explains expectations clearly.	Note assignment and plan home observation.	Individual Reinforcement	5 minutes

	Storage Aids	blocks, silica gels, and breathable fabric bags for clothing preservation.	questions.		
5	Environmental Conditions for Storage	Teacher explains ideal conditions: cool temperature, low humidity, minimal light exposure. Warns about mildew and insect infestations.	Students listen, record notes, and relate points to household experiences.	Lecture Method	20 mins
6	Summary and Review	Teacher summarizes handling and storage techniques and emphasizes sustainable practices. Conducts oral questions for quick review.	Students respond orally and prepare questions for clarification.	Lecture Method	10 mins

Assignment:

Students are to design a simple home plan for storing delicate garments, indicating materials, storage aids to be used, and the environmental conditions to maintain.

WEEK SEVEN

At the end of the whole exercise, a post-test will be administered by the researcher and research assistant to the students to ascertain the effect of the treatment on their level of understanding of the content for this study.

Validated *Ampon*
06/06/2025

Validation by psychometrician

Department of Vocational and Technical Education,
University of Benin, Benin City,
June 4, 2025.

Dr. Amen V. Ugiqul
Department of EECp
UNIBEN.

Dear Sir/Ma

REQUEST FOR VALIDATION OF RESEARCH INSTRUMENTS

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Kindly help ensure the:

1. Construct validity of the following instruments to be used as treatment in the study:
 - Scheme of work
 - Collaborative and conventional lesson plans.You are required to check if the instruments are adequate
2. Face and content validity of the two instrument for data collection. You are required to check if the items are adequate to measure the domains of learning they are intended for, and that the question items in the instruments are properly written and cover the learning contents to which the learners shall be exposed.

Information about the purpose questions hypotheses design and instruments for the study are also provided.

Thank you in anticipation of your favourable disposition to this request.

Yours faithfully

Wasini
Wasini Veronica AIDAN
+2348137903695
Wasini.aidan@edu.uniben.edu

Purpose of the Study

The main purpose of this study is to determine the effect of collaborative learning strategy on academic achievement in clothing maintenance among Home Economics Education undergraduates in Edo state. Specifically, the study seeks to determine:

1. The mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method.
2. The difference in the posttest achievement scores of students exposed to Collaborative Learning Strategy and those exposed to the Conventional Lecture Method in Clothing Maintenance.
3. The difference in academic achievement scores between male and female students taught Clothing Maintenance using Collaborative Learning Strategy.
4. The difference in academic achievement scores between male and female students taught Clothing Maintenance using the Conventional Lecture Method.
5. The interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance.

Research Questions

The following research questions were formulated to guide this study

1. What are the mean pretest and posttest achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method among Home Economics undergraduate in Edo State?
- ✓ 2. What is the difference between the academic achievement posttest scores of students exposed to Collaborative Learning Strategy and those exposed to the Conventional Lecture Method in Clothing Maintenance among Home Economics undergraduate in Edo State?
- ✓ 3. What is the difference in the academic achievement scores of male and female students taught Clothing Maintenance using Collaborative Learning Strategy?
- ✓ 4. What is the difference in the academic achievement scores of male and female students taught Clothing Maintenance using the Conventional Lecture Method among Home Economics undergraduate in Edo State?

RRG took care of these

- ✓ 5. What is the interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance among Home Economics undergraduate in Edo State?

Hypotheses

The following null hypotheses will guide the study and will be tested at 0.05 level of significance:

- Not Testable*
Separate
- ✓ 1. There is no significant difference between the mean pretest and posttest academic achievement scores of students taught Clothing Maintenance using the Collaborative Learning Strategy and those taught using the Conventional Lecture Method.
 - ✓ 2. There is no significant difference in the posttest academic achievement scores of students taught Clothing Maintenance using Collaborative Learning Strategy and those taught using Conventional Lecture Method in Clothing Maintenance.
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 - ✓ 4. There is no significant difference in the academic achievement scores of male and female students taught Clothing Maintenance using the Conventional Lecture Method.
 - ✓ 5. There is no significant interaction effect of learning method and gender on the academic achievement of students in Clothing Maintenance.
- How not care of class*
- pretest vs posttest for each group not combine*

Design of the Study

The study will adopt quasi-experimental design, specifically the pre-test and post-test non-equivalent control group design. According to Reichardt and Abraham, (2023) the design uses non-randomized groups and this occurs when the researcher cannot randomly sample and assign his subjects without disrupting the academic programmes of the schools involved in the study. The researcher therefore has to use subject groups (intact class) already in existence such as organized classes, but with different instructional design. One class will serve as the experimental group (where students will be taught clothing maintenance using collaborative learning strategy), and the other as the control group (where the students will be taught clothing maintenance using conventional method).

O_1 = pretest measure exp
 O_2 = pretest ✓ Control
 O_3 = posttest ✓ Exp
 O_4 = posttest ✓ Control

Specifically, the design of the study is shown below

Group	Pretest	Treatment	Posttest
Experimental Group	O_1	X_1	O_3
Control Group	O_2	X_2	O_4



Where O_1 = Pre-test for both experimental group and control group

- ✗ O_2 = Post-test for both experimental group and control group
- ✓ X_1 = Treatment given to the experimental group using collaborative learning strategies
- ✓ X_2 = No new treatment given to the control group (conventional teaching method)

Note
 The Sub-script represent
 the instrument or
 time taken.

Research Instrument

The instruments used in this study are of two categories instructional instrument and achievement test.

The *Instructional instruments* comprised the scheme of work, lessons plans for both experimental and control group whose content were drawn from the scheme of work specified by the university prospectus.

The *achievement test* to be used for data collection will be Clothing Maintenance Achievement Test (CMAT) a fifty multiple-choice questions with four options (one valid answer and three distractors). This is designed to measure students achievement. The items were developed by the researcher with the aid of textbooks, materials and a generative artificial intelligence, using the six topics in the scheme of work specified by the university prospectus for the experimental group, and following a table of specification based on the levels advanced by Bloom taxonomy.

Show
 this
 table
 and items
 to them.

The instrument had two versions pre-test and post-test, The items in the pre-test version were arranged according to the topics of instruction that the students would learn, while the items in the post-test version were rearranged according to the levels they are meant to measure. The responses of the participants were scored following the guides in Appendices for pre-test and post-test, respectively. Each item answered correctly will be scored 1 point, while each item answered wrongly will be scored 0 point.

The instrument consist of two sections viz section A and section B. section A sought students background such as sex, name of school, while section B consist of fifty multiple choice objective test question.

APPENDIX A

CLOTHING MAINTENANCE ACHIEVEMENT TEST (CMAT)

SECTION A Students Bio Data

NAME OF SCHOOL:

MALE: () FEMALE: ()

SECTION B

Instructions: Answer all questions on the answer sheet provided. Each question is followed by four options, letter A D. Choose the best option that corresponds to the best answer by cycling the letter which corresponds to the option

1. What is the first step in the laundry process?
 - a) Stain removal
 - b) Sorting clothes
 - c) Drying clothes
 - d) Ironing
2. Which of the following best explains the term "clothing maintenance"?
 - a) Purchasing expensive clothes
 - b) Regular care to prolong garment lifespan
 - c) Wearing clothes regularly
 - d) Donating old clothes
3. You notice your cotton shirt has a tear. What action will you take first in clothing maintenance?
 - a) Wash it
 - b) Iron it
 - c) Repair it
 - d) Soak it
4. How can regular laundry promote hygiene?
 - a) By reducing odours
 - b) By changing fashion trends
 - c) By improving clothing cost
 - d) By changing fabric texture
5. How would you differentiate between dry-cleaning and hand-washing?
 - a) Cost and convenience
 - b) Fabric type and process
 - c) Water temperature and time
 - d) Bleach quantity used
6. What are the effects of skipping regular clothing maintenance?
 - a) Increases brightness
 - b) Prevents shrinking
 - c) Causes early wear and tear
 - d) Makes clothes waterproof
7. Which laundry method is most suitable for delicate silk fabrics?
 - a) Machine wash
 - b) Boiling
 - c) Dry cleaning
 - d) Scrubbing
8. How would you assess the importance of regular clothing maintenance for personal presentation?
 - a) Slightly important
 - b) Very important
 - c) Not important
 - d) Only needed for school uniforms
9. Which of these is a bleaching agent?
 - a) Soap
 - b) Vinegar
 - c) Hydrogen peroxide
 - d) Conditioner
10. What is the primary function of soap in the laundry process?
 - a) To whiten clothes
 - b) To scent clothes
 - c) To remove dirt
 - d) To soften water
11. A fabric label recommends mild detergent. Which of these would you choose?
 - a) Bleach
 - b) Laundry bar
 - c) Baby laundry liquid
 - d) Industrial powder
12. Which laundry agent would be most effective on greasy stains?
 - a) Cold water
 - b) Vinegar
 - c) Detergent with enzymes
 - d) Fabric softener

13. What distinguishes soap from synthetic detergent?
 - a) Soap lathers more
 - b) Detergent is acidic
 - c) Soap works better in soft water
 - d) Detergent is natural
14. Why should bleaching agents be used carefully?
 - a) They can increase softness
 - b) They might damage color fabrics
 - c) They save time
 - d) They add fragrance
15. Which laundry agent is safest for coloured clothes?
 - a) Bleach
 - b) Mild detergent
 - c) Ammonia
 - d) Strong alkali
16. Evaluate the most environmentally friendly laundry agent.
 - a) Chlorine bleach
 - b) Biodegradable detergent
 - c) Starch
 - d) Harsh alkali
17. Which of these is a natural fibre?
 - a) Nylon
 - b) Polyester
 - c) Wool
 - d) Rayon
18. What does the washing symbol with a cross over it mean?
 - a) Use bleach
 - b) Do not wash
 - c) Tumble dry
 - d) Hand wash only
19. A garment label says "wash at 30°C." What should you do?
 - a) Wash with hot water
 - b) Wash in boiling water
 - c) Wash in warm water
 - d) Wash in cold or lukewarm water
20. Which care instruction is best for wool fabric?
 - a) Machine wash at high speed
 - b) Wash with bleach
 - c) Hand wash with mild detergent
 - d) Soak in hot water overnight
21. How does fibre content affect care instructions?
 - a) Determines colour only
 - b) Indicates washing temperature
 - c) Suggests fibre length
 - d) Shows label brand
22. Why is it important to check care labels before washing clothes?
 - a) To compare prices
 - b) To prevent damage
 - c) To increase wear
 - d) To ensure brightness
23. Which fabric would you recommend for easy maintenance?
 - a) Wool
 - b) Cotton
 - c) Polyester
 - d) Silk
24. Evaluate the importance of fibre identification in clothing care.
 - a) Not important
 - b) Minimally helpful
 - c) Very essential
 - d) Only necessary in fashion
25. What is the first step in removing a fresh stain?
 - a) Dry clean
 - b) Soak in hot water
 - c) Blot the stain
 - d) Iron the fabric
26. (U) Why is it advisable to treat stains immediately?
 - a) To reduce fading
 - b) To ease removal
 - c) To change fabric type
 - d) To increase colour
27. You spilled ink on a shirt. What is the best immediate action?
 - a) Rub the stain
 - b) Apply salt
 - c) Blot with alcohol
 - d) Add perfume
28. Which agent removes protein stains like blood?
 - a) Cold water and detergent
 - b) Hot water
 - c) Oil-based remover
 - d) Acid
29. How does stain type affect removal
38. What makes a repair aesthetically

- method?
- a) Some stains are colorful
 - b) Each stain needs a specific method
 - c) All stains require bleach
 - d) Stains can be ignored
30. What is the difference between chemical and natural stain removers?
 - a) Natural agents always bleach
 - b) Chemical agents are gentle
 - c) Natural agents are eco-friendly
 - d) Chemical agents leave no residue
 31. Which stain remover is best for environmental safety?
 - a) Chlorine bleach
 - b) Acetone
 - c) Lemon juice and baking soda
 - d) Industrial solvent
 32. Assess the effectiveness of soaking versus scrubbing in stain removal.
 - a) Scrubbing is always better
 - b) Soaking is better for set-in stains
 - c) Scrubbing works for all fibres
 - d) Soaking weakens fabrics
 33. What is darning?
 - a) Removing stains
 - b) Mending holes using stitches
 - c) Washing delicate fabrics
 - d) Ironing clothes
 34. What is the purpose of patching?
 - a) To change fashion
 - b) To cover holes or tears
 - c) To bleach clothes
 - d) To adjust colour
 35. Your shirt has a small hole. What simple repair method can be applied?
 - a) Ironing
 - b) Scrubbing
 - c) Darning
 - d) Stretching
 36. A large tear in denim is best repaired by:
 - a) Drying
 - b) Soaking
 - c) Patching
 - d) Folding
 37. How does fabric type influence repair method?
 - a) All fabrics can be darned
 - b) Stretch fabrics need patches
 - c) Woven fabrics patch better
 - d) Fabric type does not matter
- pleasing?
- a) Large visible stitches
 - b) Matching thread and neatness
 - c) Using bright colours
 - d) Ironing the repair
39. Why is patch placement important?
 - a) To increase weight
 - b) To make patch visible
 - c) To maintain garment shape
 - d) To add bleach
 40. Assess the durability of darning versus patching.
 - a) Patching is always better
 - b) Darning is stronger
 - c) Depends on tear size and location
 - d) Both are equally weak
 41. What criteria determine a successful garment repair?
 - a) Colour contrast
 - b) Fashion label
 - c) Functionality and appearance
 - d) Brand of thread used
 42. Which item is a special garment?
 - a) Cotton T-shirt
 - b) Wool suit
 - c) Nylon socks
 - d) Denim trousers
 43. What is the main reason for proper clothing storage?
 - a) To decorate a room
 - b) To change colour
 - c) To prevent damage
 - d) To increase cost
 44. How would you store a wool coat during rainy season?
 - a) Fold in airtight bag
 - b) Hang in cool, dry place
 - c) Soak in water
 - d) Leave on floor
 45. Which storage method suits delicate silk garments?
 - a) Hanging with padded hangers
 - b) Folding tightly
 - c) Stuffing in drawers
 - d) Hanging with wire
 46. How does climate affect clothing storage?
 - a) Cold weather shrinks fabric
 - b) Humidity causes mildew
 - c) Hot air preserves colour
 - d) Dry air bleaches colour

47. What makes mothballs effective in storage?
 - a) Their smell repels insects
 - b) They clean garments
 - c) They absorb moisture
 - d) They bleach clothes
48. Why are padded hangers used for suits and jackets?
 - a) To stretch fabric
 - b) To support shape
 - c) To add fragrance
 - d) To reduce dust
49. Evaluate the importance of separating seasonal garments.
 - a) It creates disorder
 - b) It saves money
 - c) It prolongs garment life
 - d) It wastes time
50. What is the most important consideration in storing clothes long-term?
 - a) Fold size
 - b) Temperature control
 - c) Colour
 - d) Fashion trends

1. What about the Table of Specification that gave rise to these items distributions?
2. Ensure that all aspects are adequately captured.

Amr 8/6/25
Dr A. V. Ujigwe

COURSE OUTLINE TOPICS PER WEEK

Week	Topic
1	Introduction to Clothing Maintenance & Laundry Processes
2	Laundry Agents & Application Techniques
3	Fibre Types and Interpretation of Care Labels
4	Stain Removal Procedures
5	Simple Garment Repairs (Darning and Patching)
6	Care of Special Garments & Clothing Storage

There should be a Table of Specification to show the distribution of questions across the Course Content and Instructional objectives.

Table of Specification / Test blue print

Instructional Obj. Content	Knowledge	Understanding	Application	Interpretation	TOTAL
Topic 1					
Topic 2					
Topic 3					
Topic 4					
Topic 5		113			
Topic 6					
TOTAL					50

**LESSON PLAN FOR THE COLLABORATIVE LEARNING STRATEGY
(EXPERIMENTAL GROUP)**

COLLABORATIVE LEARNING STRATEGIES USED

Strategy Name	Brief Description
Peer Instruction Learning	Students work in pairs/small groups to discuss concepts, solve problems, or teach each other.
Think-Pair-Share	Individual reflection, followed by paired discussion, then sharing with the larger group.
Jigsaw	Each group member becomes an 'expert' on one piece of information and teaches it to their 'home' group.
Group Projects	Teams collaborate on a complex task over an extended period, often involving multiple skills and roles.
Case Studies	engage in activities mimicking real-world situations.
Role-Playing	Students act out roles relevant to professional situations to practice interactions and skills.

✓
The plans are well detailed
Dr. A. X. Bygones

WEEK 1 COLLABORATIVE LESSON IMPLEMENTATION PLAN

Course Title: Clothing Maintenance

Level: 200-Level Undergraduate

Topic: Introduction to Clothing Maintenance and Laundry Processes

Duration: 2 Hours (120 Minutes)

Instructional Method: Collaborative Learning Strategy (Think-Pair-Share, Group Discussion)

General Objective: Introduce students to the importance of clothing maintenance, types of laundry processes, basic laundering steps, and common laundering mistakes.

Specific Objectives: By the end of the lesson, students should be able to:

1. Explain the significance of clothing maintenance for personal hygiene, budgeting, and sustainability.
2. Identify different types of laundry processes.
3. Outline the basic steps involved in laundering clothes.
4. Mention common laundering mistakes and how to avoid them.

Instructional Materials:

- Whiteboard and markers
- Samples of detergent and soap
- Laundry equipment (pictures or real items: washing machine, iron, basin, pegs)
- Charts showing laundry steps

APPENDIX H

RELIABILITY TEST – CRONBACH ALPHA’S STATISTICS

RELIABILITY

```
/VARIABLES=QUESTION_01 QUESTION_02 QUESTION_03 QUESTION_04  
QUESTION_05 QUESTION_06 QUESTION_07 QUESTION_08 QUESTION_09  
QUESTION_10 QUESTION_11 QUESTION_12 QUESTION_13 QUESTION_14  
QUESTION_15 QUESTION_16 QUESTION_17 QUESTION_18 QUESTION_19  
QUESTION_20 QUESTION_21 QUESTION_23 QUESTION_24 QUESTION_25  
QUESTION_26 QUESTION_27 QUESTION_28 QUESTION_29 QUESTION_30  
QUESTION_31 QUESTION_32 QUESTION_33 QUESTION_34 QUESTION_35  
QUESTION_36 QUESTION_37 QUESTION_38 QUESTION_39 QUESTION_40  
QUESTION_41 QUESTION_42 QUESTION_43 QUESTION_44 QUESTION_45  
QUESTION_46 QUESTION_47 QUESTION_48 QUESTION_49 QUESTION_50  
QUESTION_51  
/SCALE('ALL VARIABLES') ALL  
/MODEL=ALPHA.
```

Reliability

[DataSet0]

Scale: ALL VARIABLES

Case Processing Summary

		N	%
Cases	Valid	20	100.0
	Excluded ^a	0	.0
	Total	20	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.847	50

APPENDIX I

RELIABILITY TEST – KUDER-RICHARDSON ANALYSIS

Item	P	Q	PQ
1	0.80	0.20	0.16
2	0.95	0.05	0.05
3	0.95	0.05	0.05
4	0.85	0.15	0.13
5	0.55	0.45	0.25
6	0.95	0.05	0.05
7	0.70	0.30	0.21
8	0.95	0.05	0.05
9	0.80	0.20	0.16
10	0.90	0.10	0.09
11	0.55	0.45	0.25
12	0.65	0.35	0.23
13	0.75	0.25	0.19
14	1.00	0.00	0.00
15	0.75	0.25	0.19
16	0.95	0.05	0.05
17	0.75	0.25	0.19
18	0.80	0.20	0.16
19	0.90	0.10	0.09
20	0.85	0.15	0.13
21	1.00	0.00	0.00
22	0.35	0.65	0.23
23	0.95	0.05	0.05
24	0.55	0.45	0.25
25	1.00	0.00	0.00
26	0.90	0.10	0.09
27	0.75	0.25	0.19
28	0.90	0.10	0.09
29	0.90	0.10	0.09
30	0.80	0.20	0.16
31	0.70	0.30	0.21
32	0.95	0.05	0.05
33	1.00	0.00	0.00
34	0.85	0.15	0.13
35	0.95	0.05	0.05
36	0.50	0.50	0.25
37	1.00	0.00	0.00
38	1.00	0.00	0.00
39	0.70	0.30	0.21
40	0.80	0.20	0.16

Item	P	Q	PQ
41	0.80	0.20	0.16
42	0.65	0.35	0.23
43	1.00	0.00	0.00
44	0.95	0.05	0.05
45	0.75	0.25	0.19
46	0.70	0.30	0.21
47	1.00	0.00	0.00
48	0.95	0.05	0.05
49	0.90	0.10	0.09
50	0.70	0.30	0.21

Analysis Summary

K	20
σ^2	11.6289
$\sum PQ$	3.3725
KR-20	0.7474