

***Knowledge Exchange for the Solar Decathlon Europe 2021-2022 Team Uniforms Design;
Thai Local Craft Community, Fashion Design and Architecture Students***

Thanotai Mongkolsin, Bangkok University, Thailand

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Abstract

Functionable architecture students' uniforms are designed by teams of fashion design students as a representative team from Thailand to participate in the Solar Decathlon Europe 2021-2022 (SDE 21-22) competition aiming to build an energy-saving house in Wuppertal, Germany. Therefore, the focus of this study is for lecturers to structure an appropriate study plan, monitor the process and facilitate students including the collaboration of teaching and learning from interdisciplinary, architecture and fashion design, also to incorporate Thai identity through the integration of Thai local wisdom "Pha Khao Ma" (Thai loincloth) into the making of three sets of uniform prototypes; 1) workwear, 2) business casual attire, and 3) tailor suit. The study methodology is divided into four parts. First, the lecturers structure the study plan for the sixteen weeks class sessions. Next, architecture and fashion design students are working together under the lecturers' supervision and facilitation. Then, all parties visit and work together with the local community to create a uniform prototype through the use of "Pha Khao Ma." And finally, the prototype collection is completed by the fashion design students. As a result, in the studio classroom environment, students are not only learning to embrace different disciplines and aesthetics, but also creatively utilizing material from the local wisdom in a knowledge exchange process for a unique final design execution.

Keywords: Knowledge Exchange, Local Wisdom, Cross Culture, Thai Loincloth, Multi-Disciplinary Learning, Interdisciplinary Learning, Team Uniform, Knowledge Integration

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Introduction

Solar Decathlon Europe 2021-2022 (SDE 21-22) was a competition aiming to build an energy-saving house in Wuppertal, Germany. Architecture students from Bangkok University participated and represented Thailand while Fashion Design student were responsible for designing functional uniforms for the competition. The uniforms needed to incorporate Thai identity through the integration of Thai local wisdom “Pha Khao Ma” (Thai loincloth) in the design. Therefore, the focus of this study is for the lecturers to structure an appropriate study plan, monitor the process and facilitate students. The collaboration included interdisciplinary teaching and learning in; architecture, fashion design, and Thai local wisdom to create three sets of uniform prototypes; 1) work wear, 2) business casual attire, and 3) tailor suit.

Objective

1. To allow the students to learn and work interdisciplinary; architecture, fashion design, and Thai local wisdom
2. To exchange knowledge between three groups of contributors; architecture students, fashion design students, and Thai local crafts community
3. To create three sets of uniforms prototypes; workwear, business casual attire, and tailor suit

Knowledge Exchange

The definition of “knowledge”, the scientific literature reviewed does not offer a clear, dominant definition. The smallest common denominator is the generic notion of “information” set by our heuristic definition of the field (Damien, Marc, Jean & Émile, 2010). Knowledge related to skills, expertise or judgements can flow among colleagues, clients, suppliers or business partners (Nonaka et al., 2006). An extensive body of literature in sociology and anthropology has shown that different societies have developed different structures for exchange of items such as goods, status and information (Stephen & Chong, 2005). Knowledge exchange can be understood as a dynamic and fluid process which incorporates distinct forms of knowledge from multiple sources (Vicky, Simon, Allan & Susan, 2012). Knowledge exchange refers to activities and processes for transmitting and receiving knowledge (Coradi et al., 2015; Saifi et al., 2016). Knowledge exchange is the process during which members’ perspectives, information, and know-how enter into team interactions and are shared and discussed (Gibson, 2001). Actual knowledge exchange systems are composed of numerous individuals, and the intragroup diversity of positions, opinions, preferences, and interests should never be discounted (Damien, Marc, Jean & Émile, 2010). Scholars have linked knowledge exchange processes with team effectiveness, defined most basically as the extent to which a team accomplishes its objectives (Mathieu, Maynard, Rapp, & Gilson, 2008). Specifically, researchers have found that a key differentiator in this process is whether the team has developed a psychologically safe communication climate, defined as an atmosphere marked by open, supportive communication (Edmondson, 2003; Gibson & Gibbs, 2006; Metiu & Rothbard, 2013). In this research, the lecturer used three groups of people to exchange their knowledge in both online and onsite channels due to the pandemic of COVID-19 period through a subject for Fashion Design student. There were Architecture students, Fashion Design students, and Thai local craft community in three groups of people to work collaboratively and exchange their own

different disciplines with the same purpose. The interdisciplinary knowledge exchange was the main key of the study.

Interdisciplinary Knowledge Exchange

1. *Architecture and Fashion Design*
 - Team uniforms requirements
 - Architecture work details
 - Fashion design elements
 - Textile and materials recommendations
2. *Fashion Design and Thai local crafts community*
 - Weaving process
 - Local wisdom
 - Colour theory
3. *Thai local crafts community and Architecture*
 - Local wisdom
 - Weaving process
 - Team uniforms requirements

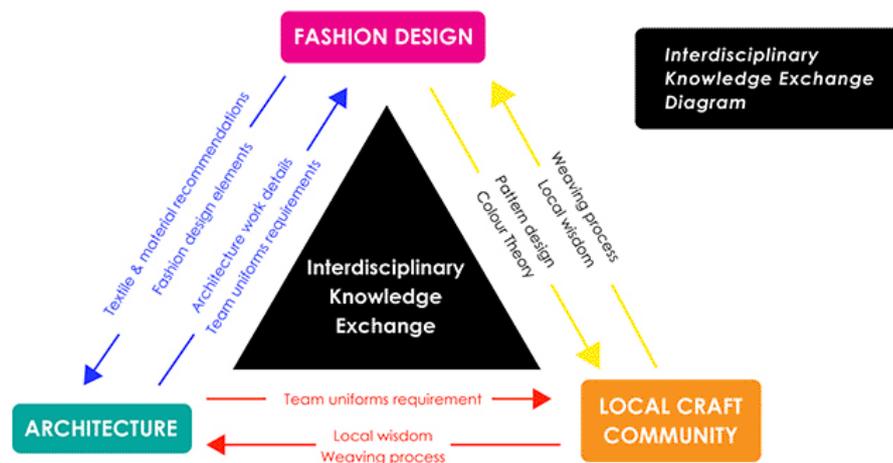


Figure 1: Interdisciplinary Knowledge Exchange Diagram

Teaching and Learning Experiences in Studio Class

This study used FD282 Fashion and Culture in Digital Society course in semester 1 of year 2021 to do this research. This course was for the third-year fashion and design students. The lecturer structured a sixteen weeks study plan to monitor the process and facilitate the students. The study plan was divided into three modules:

- 1) Introduction to Team Uniform for Solar Decathlon Europe 2021-2022
- 2) Brainstorm and Sketch
- 3) Production Process

In those three modules, there were four learning models;

- 1) Online Class
- 2) Online Tutorial
- 3) Home Studio or Self-study
- 4) Onsite Experience

The online class and tutorial were employed due to COVID-19 restrictions and the lecturer used MS Teams program to run both models.

Creation Process

This picture below is a sixteen weeks study plan for FD282 subject in semester 1 of year 2021. In this study plan is to show four learning models, course outline, team teaching and interdisciplinary knowledge exchange throughout the course.

Creation Process:

16 Wks. Study Plan FD282/2021

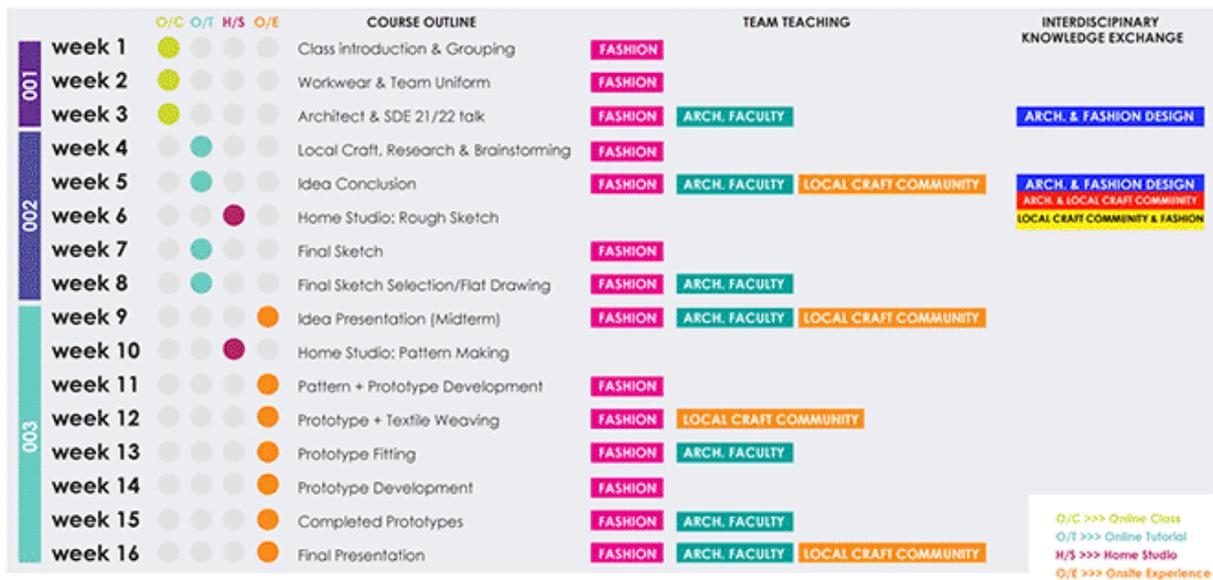


Figure 2: 16 weeks study plan for FD282 subject in semester 1 of year 2021

Module One: Introduction to Team Uniform for Solar Decathlon Europe 2021-2022

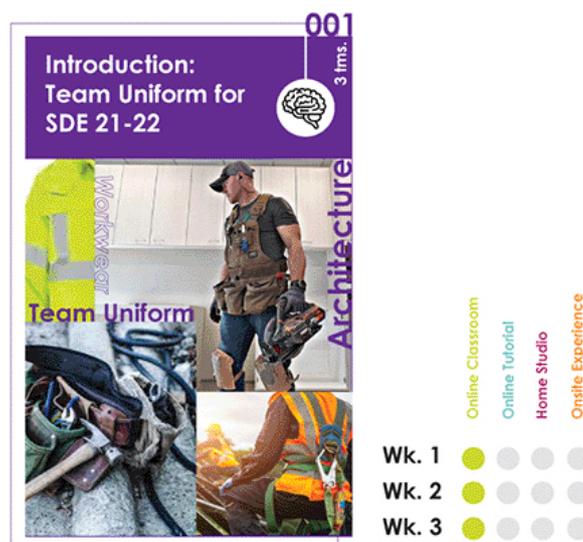


Figure 3: Module one: Introduction to Team Uniform for Solar Decathlon Europe 2021-2022

Week one: Class introduction and Grouping

In the first week, the lecturer began the subject, FD282 with the course introduction, information on the weekly class descriptions and assigned the fashion design students to divide into three groups according to the three categories of the team uniform; Workwear, Business casual attire, and Tailor suit. There were sixteen students in each group.

Week two: Workwear and Team Uniform

In the second week, a lecture on the introduction to workwear and the details of the team uniform were given by the lecturer to fashion design students in order to understand the scope and functional requirements before meeting the architecture students in the following week.

Week three: Architect and Solar Decathlon Europe 2021-2022 Talk

After learning in week one, fashion design students had a meeting with architecture students in an online class to discuss and share functional requirements design preferences and essential architecture knowledge to design the team uniform for SDE 21-22. Fashion design students in each group would receive necessary information and prepared to plan their design project. One of the most important elements requests was the incorporation of Thai identity in all of the uniform designs. Therefore, Thai traditional fabric from a local craft community was collaborated in this project.

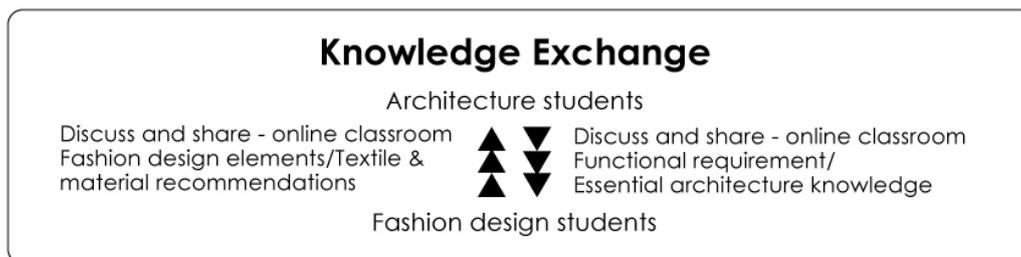


Figure 4: Knowledge Exchange between Architecture students and Fashion Design students

Module Two: Brainstorm and Sketch



Figure 5: Module two: Brainstorming and Sketch

Week four: Local Craft, Research and Brainstorming

In the fourth week, the second module started with each group of fashion design students presenting their researches on their inspiration and fashion design elements including; colour, silhouette, material, detail and technique. The lecturer gave feedbacks and recommendations to develop the design projects to be resubmitted in the following week.

Week five: Idea Conclusion

Each group of fashion design students presented their researches to the class; architecture students and local craft community representatives. Then all comments and feedbacks were collected to develop their sketches. Local craft community is a group of villagers from Roi Et province in the Northeastern part of Thailand, specialized in loincloth (Pha Khao Ma) weaving with local wisdom.



Figure 6: Knowledge Exchange between Architecture students, Fashion Design students, and Local Craft Community

Week six and seven: Sketch

In the sixth and seventh week, each group of fashion design students needed to sketch their idea within the assigned category to be selected as the final design. Workwear group was assigned to design an operation vest prototype. Business casual attire group needed to design a polo shirt and a hoodie prototype. Tailor suit group was responsible to design blazers, trousers and skirts prototypes.

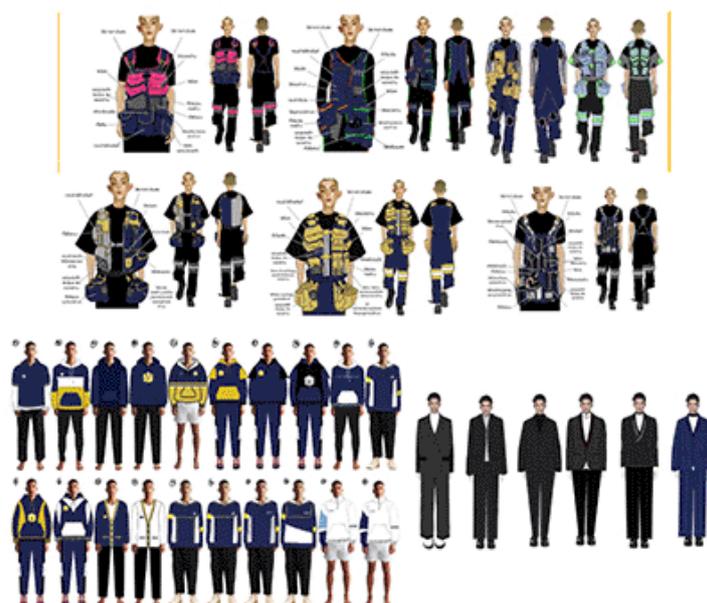


Figure 7: Examples of sketch in each group

Week eight: Final Sketch

In the eighth week, there was an online meeting between fashion design students and architecture students to finalize the design for each category. After concluding all final sketches, fashion design students needed to provide flat drawings for each selection to develop into the production process.

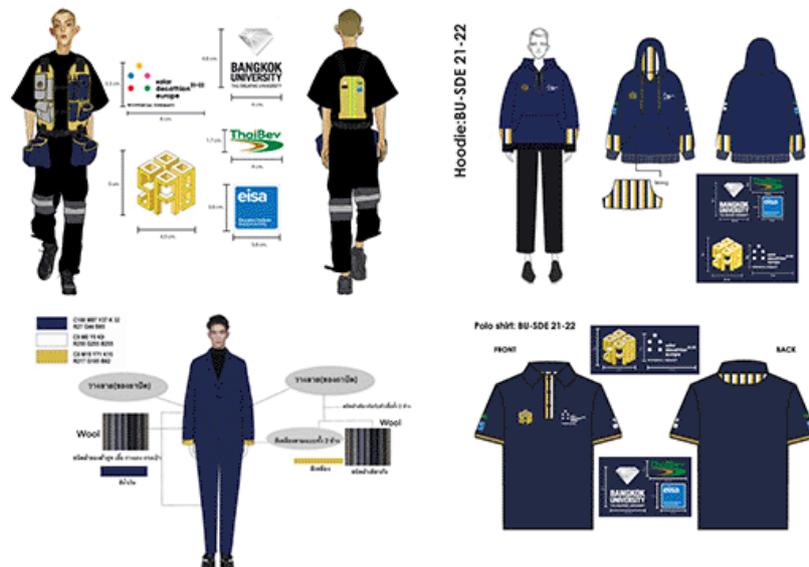


Figure 8: Final sketch in each group

Module Three: Production Process



Figure 9: Module three: Production Process

Week nine: Midterm Presentation

The production process started in the ninth week during the period of midterm presentation. There were three groups of contributors participating in the midterm presentation: fashion design students, members of architecture faculty, and local craft community representatives. The lecturer was responsible for facilitating this presentation. All final sketches and flat drawings were concluded and ready to make toiles patterns in the next step. All works from

three groups of fashion design students were scored and evaluated as a midterm project by architecture student representatives and lecturers, local craft community representatives and a course lecturer.

Week ten to fourteen: Pattern Making and Toile Development

All prototypes were created by fashion design students in each group in the tenth to fourteenth week of the course. Each group made team uniform patterns, developed, and fitted their toiles until the design were perfect. In the twelfth week, the local craft community came to the class to submit the loincloth (Pha Khao Ma) example to fashion design students to use in their prototypes.

Week fifteen and sixteen: Final Outcome

In the fifteenth week, all groups of fashion design students needed to submit their completed prototypes of team uniform to the course lecturer, architecture students, and lecturers. In the sixteenth week, fashion design students needed to give a final presentation to the lecturer, members of architecture faculty, and local craft community representatives where their work would be assessed for grading. Two final outcomes could be derived from this research. Firstly, knowledge exchange between three groups of people; fashion design student, architecture students, and local craft community is to learn and share their own knowledge together. Another outcome was resulted in the final prototypes of three categories; workwear, business casual attire, and tailor suit.

Final Outcome

Workwear



Figure 10: Final outcome of Workwear

Business Casual Attire



Figure 11: Final outcome of Business Casual Attire

Tailor Suit



Figure 12: Final outcome of Tailor Suit

Conclusion

To conclude, the lecturer structured an appropriate study plan, monitored the process and facilitated students throughout the course. The project included the interdisciplinary of teaching and learning, collaborating architecture and fashion design and incorporation of Thai local wisdom “Pha Khao Ma” (Thai loincloth) into the making of three sets of uniform prototypes; 1) workwear, 2) business casual attire, and 3) tailor suit. The final designs were worn by architecture students of Bangkok University as a representative team from Thailand

to participate in the Solar Decathlon Europe 2021-2022, a competition aiming to build an energy-saving house in Wuppertal, Germany. In addition, the students did not only learn to embrace different disciplines and aesthetics, but also creatively utilizing materials from the local wisdom in a knowledge exchange process for a unique final design execution.

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Contact email: thanotai.m@bu.ac.th