Enhancing Content Marketing Design through Design Thinking and the TPACK Framework

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***Abstract*—This study aims to develop an online learning process that employs design thinking within the Technological Pedagogical Content Knowledge (TPACK) framework, followed by an experimental implementation. The study is segmented into three stages: studying primary requirements, developing the process and executing experiments. The sample group comprised social entrepreneurs, experts in innovation and learning technology, and specialists in content marketing. The study's findings reveal that half of the entrepreneurs lacked adequate experience in design thinking and acknowledged their limited understanding of the concept. The development of an effective online learning process obtained three essential mechanisms: the TPACK framework, the learning components and instructional activities. The instructional activities have been structured to include online learning, course introductions, learning by doing, summaries, workshops and practical work, and evaluations of learning outcomes. The post-learning scores of the sample group were significantly elevated compared to their pre-learning scores across all three dimensions: content marketing knowledge, design process capability and design work quality. The level of satisfaction regarding the online learning process was high.**

***Keywords*—content marketing, digital learning, design thinking, online learning process, Technological Pedagogical Content Knowledge (TPACK) framework**

I. Introduction

Social enterprise is a business model to operate a business driven by social or environmental goals while having the ability to generate profits to drive sustainable social goals in business [1]. Driving an organisation to fulfil both social and business goals is more challenging than focusing solely on commercial objectives. There are currently 329 social enterprises registered and located nationwide in Thailand. In 2021, a report on the problems and obstacles affecting the growth of Thai social enterprises found that 22.6 per cent were due to consumers not yet being aware of and recognising social enterprises. The resolutions of the Thai Social Enterprise Assembly in 2022 and 2024 proposed solutions to this problem by supporting social enterprises to create online platforms to create diverse communications with contemporary content and to tell stories to promote awareness and understanding of social enterprises for continuous public access [2]. Because existing training is not comprehensive in all areas, it is also necessary to develop online learning resources that facilitate social enterprises by operating in a format that allows students to choose the desired topic and study anywhere, anytime [3].

Content marketing is a strategic marketing approach focused on creating and distributing valuable, relevant and consistent content to attract and retain a clearly defined audience [4]. Developing content to persuade the target group to employ content marketing is an essential point all businesses should investigate in order to be competitive in the digital world [5]. Interviews with social enterprise entrepreneurs revealed the need for them to enhance their skills in content marketing design, enabling them to craft campaigns that consistently deliver valuable content that aligns with the target group's needs. However, entrepreneurs often lack the necessary knowledge and experience in using technology and digital media to develop content marketing designs that are more convenient, easier to implement, and engaging.

The utilisation of design thinking to solve problems at work, create innovation and enhance instructional methods has garnered significant attention as a novel methodology for innovation and issue resolution [6]. The design thinking approach focuses on developing innovations that emphasise the target group. This requires determining the real problems and requirements of the target group through brainstorming, amalgamating insights to generate new ideas, and developing prototypes that facilitate testing with the target group to refine the most appropriate solution or innovation for them [7–10]. Design thinking is widely applied as a creative solution process to instruct entrepreneurs [11]. Design thinking and entrepreneurship are critical issues in the contemporary innovation management discourse, which is useful for entrepreneurs to discover [9]. Design thinking has been applied to design mindset, processes and tools to resolve learning and teaching issues and develop entrepreneurial competency, with satisfactory results [12–17].

Technological Pedagogical Content Knowledge (TPACK) is a framework designed to utilise technology to solve learners' challenges by choosing and employing technology that aligns with the content, pedagogical approaches and learning context [18]. Comprehending the TPACK framework enables instructors to create an innovative pedagogical method [19]. Instructional methodologies developed under the TPACK framework can effectively facilitate learners in attaining their educational goals.

From the above, it can be seen that it is necessary to have the potential to create marketing content for social enterprise entrepreneurs to use in communicating and publicising, creating awareness about their own social enterprises to help them grow sustainably. The problems found by research could be potential obstacles to the development of social entrepreneurs. For example, there is a lack of knowledge and ability to design content marketing, insufficient local training, and an inability to achieve self-directed learning. The last issue is the failure to use digital methods and technologies to

help design content marketing. Derived from the issues mentioned, the research questions are:

1) How skilled are the social enterprise entrepreneurs in content marketing design, and in what areas might they improve?
2) How can the use of design thinking and the TPACK framework support effective online learning processes and enhance content marketing knowledge, ability in the design process, design work quality?
3) What is the success and the satisfaction of social enterprise entrepreneurs in various regions after undergoing the online learning process?

We will now outline the research objectives after defining the issues that prompted this study:

- To study general conditions of content marketing and design thinking for social entrepreneurs.
- To create the online learning process using the principles of design thinking and the TPACK framework to enhance content marketing design for social enterprise entrepreneurs.
- To experiment with the online learning process that integrates design thinking principles and the TPACK framework to enhance social enterprise entrepreneurs' content marketing design.

II. Literature Review

A. Design Thinking: Mindset, Process and Tools

Design thinking implementation of solutions to work issues and inventions and its integrating them with teaching and learning is gaining interest as a new approach to innovation creation and problem-solving [6]. One way of design thinking is to create innovations based on the target group, defining the problem and the target group's actual needs through brainstorming to generate fresh ideas. This is followed by making/designing a simple prototype that can be tested with the target group before improving it to acquire the work or appropriate innovation for the target group [7–10].

Table 1. Differences between design thinking schools of thought concerning the design thinking process

	School of thought around the design thinking process					
	1	**2**	**3**	**4**	**5**	**6**
	Empathizing with the target group	**Defining the problem's framework**	**Process of generating ideas**	**Making a project prototype**	**Testing and evaluation**	**Other**
d. School	Empathize	Define	Ideate	Prototype	Test	
HPI Academy	Understand and observe	Define the point of view	Ideation	Prototyping	Test	
IDEO U	Framing a question	Gathering inspiration	Generative ideas	Making ideas tangible	Testing to learn	Sharing the story
Brenner *et al*.	Need finding and synthesis	Define the problem	Ideate	Prototype	Test	
Ingle	Empathize	Define	Ideate	Prototype	Test	
Mintrom and Luetjens	Empathically observe target group	Explore the problem	Canvas possible solutions	Develop a prototype solution	Test the prototype with the target group	
Lewrick *et al*.	Understand and observe	Define the point of view	Ideation	Prototype	Test	Reflection
Rauth *et al*.	Understand observe and empathy	Determine problems with tools	Create concepts with methods	Design the prototype using simple method	Test and evaluate the prototype	
Grönman and Lindfors	Empathy and user focus	Defining and problem framing	Creating ideas	Visualization	Experiment and iteration	

Table 2. Summary of methods and tools to support design thinking

Methods and tools to support Design Thinking				
Empathizing with the target group	**Defining the problem's framework**	**The process of generating ideas**	**Making a project prototype**	**Testing and evaluation**
Observation, Mind maps, Personas, Empathy map, Need-finding cycle, Guidelines for expressing needs, Target group identification, Focus groups interviews, Moodboard, AEIOU, Netnography, Point of view, Camera study, Problem statement, Ask 5x why, 5W&H Question, Customer journey	Question statement, Stretch goals, Framing & reframing, Get inspiration, "How might we...", Storytelling, Context mapping, Define success, Vision cone, Critical items diagram	Brainwriting, Sketching, Visual & semantic, Brainstorming, Six thinking hats, Power of ten, How might me, 2x2 Matrix, Dot voting, 6-3-5 method, Analogies & benchmarking as inspiration, NABC, Blue ocean tool, Buyer utility map	Storyboard, Wireframing, Mock-ups, Open hardware, Roleplay, Paper prototype, Video prototype, Storytelling and Story-writing, Comics, Sketches and scribbles, Photoshop, Combined prototype, Confluence dynagram, Exploration map, Service blueprint	Consumer clinics, Usability testing, NABC pitch, PechaKucha, Testing sheet, Feedback capture grid, Powerful questions in experience, Testing solution interview, Structured usability testing, A/B testing

Table 1 indicates differences between design thinking schools of thought concerning the design thinking process, including Brenner *et al*. [10]; Both [20]; Grönman and Lindfors [21]; HPI-Academy [22]; IDEOU [23]; Ingle [24]; Lewrick *et al*. [25]; Mintrom and Luetjens [26]; and Zupan and Nabergoj [27]. According to the educators and experts, it can be concluded that there are five steps for achieving design thinking: 1) empathising with the target group; 2) defining the problem's framework; 3) the process of generating ideas; 4) making a project prototype; and 5) testing and evaluation.

However, a different step is IDEO U's sharing of the story, the step after making and testing the prototype. This step involves creating a story based on experience and sharing it with other people, which reflects and helps improve the design thinking. Another difference is Lewrick *et al*.'s [25] reflection: this is the consideration of the work step using a construct such as "I like, I wish, I wonder" for further improvement.

Uebernickel *et al*. [28], Tschimmel [29], and Lewrick *et al*. [25] propose the tools and methods of process, as summarised in Table 2.

Table 2 summarises the methods and tools of the design thinking process in each step. For instance, in the step of empathising with the target group, many methods and tools are listed: the designer can choose those that are appropriate, such as using the interview and observation method to gain in-depth data from the target group. The obtained data can then be summarised using the personas/user profile canvas.

B. Online Learning

1) Advantages and weaknesses of online learning

Online learning promotes remote learning. Use of the internet in learning eliminates limitations of distance and time on development of the learning experience: learners can easily access learning from any place [30]. Online learning is the latest and most popular distance learning paradigm [31] and offers flexibility and lower costs because learners can study anywhere at any time. However, the weaknesses are a lack of reactivity and response, complicated technology that may cause learning failure, difficulty reaching the instructor, and health risks from computer and equipment use [32]. Irrespective of the weaknesses, research has shown that online learning increases learners' enthusiasm, the instructor-learner connection and self-learning [33–35]. The use of friendly technology, the learner-centred approach and the interaction and collaboration between learners and instructors based on motivation and expectations affect online learning [36]. The learner, instructor, learning resources and technology determine the success of online learning [37].

2) Fundamental principles and theories related to designing online learning

Three fundamental concepts of online learning design for an effective remote learning programme include transactional distance; cognitive, social and teaching presences; and independent learners [30].

Transactional distance advises that classroom learning is not required for teaching and learning, and the instructor and learners will be closer because of technology. Significant ingredients of learning management are dialogue and structure. The essential structures of remote learning include: a) the presentation of information using various methods; b) encouragement or motivation so the learners are interested in the learning using different techniques—e.g., movies, text, conversation; c) fostering analysis and criticism; d) consultation and advice on using learning media, learning skills enhancement and handling the learning issues; e) preparation for training, tests and evaluations, and the opportunity to converse with the instructor to obtain feedback; and f) knowledge construction, which allows the learners to take part in the conversation sufficiently to share an idea with the instructor [38].

According to Garrison [39], the most important practice for online learning is found in the three components based on the Community of Inquiry (CoI) model: cognitive, social and teaching presence. Cognitive presence-related practices include encouraging learners' participation, curiosity, critical thinking and creativity; suggesting useful sources of information; recommending ways to meet expectations and assignments; and connecting the course idea to practical adaptation. Social presence tactics include asking questions and expressing ideas, using good humour, using images and kind words and meeting with students online (Zoom, Google Meet). Teaching presence practices include designing the course and teaching to suit the learners; promoting media and tools to improve skills and knowledge; using learning resources to match proficiency; informing learners of expectations and scoring criteria; and supporting improvement to help learners succeed [40].

Individuals engaged in online learning take charge of their educational journey through self-directed study—navigating various information sources independently, guided by their own interests and goals. They hold the responsibility for the learning process and must be ready to embrace risks while tackling challenges head-on. Academies City [41] suggested that learners should set the learning plan entirely, allocate their daily study time, set a personal goal, request assistance when needed, discover genuine motivation, construct a personal learning structure, understand and learn from their mistakes, and the aim should be set in order to accomplish development.

3) Designing the online teaching process under the TPACK framework

One development framework that can be employed is TPACK. The challenge of online learning is to assure the quality of online learning and teaching by transferring traditional teaching and activities to the online platform and creating new media [42]. In order to instruct subjects in distinctive contexts, it is imperative to incorporate effective technologies. The unique identity of each situation is determined by the instructor, the level, the distinguishing factors of each institute, population data, culture and other factors. No instructor, curriculum or teaching style applies a single content, technology or teaching style to all situations [18]. Designing learning processes that integrate appropriate technologies with content and teaching methods to accomplish optimal learning is made possible by comprehending the TPACK framework.

The TPACK framework explains and emphasises the integration of knowledge from three domains: 1) Technology (TK); 2) Pedagogy (PK); and 3) Content (CK), combining to form the main models: 4) Pedagogical Content Knowledge (PCK); 5) Technological Content Knowledge (TCK); 6) Technological Pedagogical Knowledge (TPK); and 7) TPACK. TPACK is a technology-based teaching system that includes being aware of how to use technology to convey ideas, explaining material creatively, figuring out how to make learning easier or more difficult, and how technology might aid in problem-solving [18].

4) Digital learning

Digital learning utilises technology to improve learning.

Continuous digital learning gives learners abilities in digital technology for learning and self-development, which is essential for future living and working [43]. Various digital technology instruments boost digital learning instructional activities, making effective and appropriate learning models for students. Kongmanas [44] classifies digital learning tools as instructional, content creation, online resources, social, personal and professional tools. Learning Management Systems (LMS), synchronous technologies, multimedia applications, collaborative applications, cloud-based technologies, and developing technologies are recommended by Alenezi [45]. Taber and Li [46] group tools by purpose: curriculum supporting resources, personal development tools, artificial intelligence, educational games, administrative and organisational tools, online meeting tools and e-textbooks. The purposes, the breadth of instructor engagement, the complexity of learner metacognition, the applications attributed to monitor learner usage, guidance and recommendations and activity pathways to intended learning goals determine whether these technologies facilitate efficient learning.

C. Analysing the Online Learning Courses for Content Marketing

Table 3 summarises online content marketing course subjects, formats and media from academy.hubspot.com, udemy.com, digitalmarketinginstitute.com, shiksha.com, semrush.com, maven.com, and contentmarketing university.com. Data will inform the online learning process components.

Table 3. Analysing online learning courses for content marketing

Course Content	Online Learning Model	Media/Learning Sources
• Introduction to content marketing • Brand and storytelling • Content research • Target audience • Content marketing strategy • Content ideation • Creating content • SEO writing assistant • Keyword magic tool • Topic research • SEO content template • Brand monitoring tool • Social media poster • Post tracking tool • Marketing calendar • Effectively promoting content • Measuring and analysing	• Cohort-based course • Interactive live sessions • Live workshops • Self-paced lessons • Direct access to instructor • Private community of peers	• Videos • Case study • Articles • E-book • Downloaded data • Practical toolkits and templates • Course workbook • Quizzes

III. Methods and Materials

This study is a research and development initiative comprising three stages.

A. Stage 1: Study of General Conditions of Content Marketing and Design Thinking for Social Entrepreneurs

The primary requirements research examines social entrepreneurs' design thinking and content marketing experience and needs. Examination factors include age, education, content marketing needs, design thinking and content marketing difficulties. The collected data are used to develop an online learning process. This study's population consists of entrepreneurs who have registered as Thai social enterprises with the social enterprise promotion office. The sample group consisted of thirty-three social enterprise entrepreneurs who were randomly selected using purposive sampling based on the following conditions: being a registered social enterprise; representing five regions nationwide; having social objectives in terms of solving community and social development problems, solving environmental development problems and creating employment opportunities; and having consented to participate in the research project. This research uses a questionnaire that aims to explore general personal information, content marketing requirements and experience, and design thinking needs and experience. The questionnaire has open-ended questions with response choices where respondents might elaborate. Part 1 features three general information questions, while Part 2 has seven questions. Examples of Part 2 questions are shown in Table 4.

Table 4. Sample of questions about experience and needs for content marketing and design thinking

Question	Answer choice
1. Experience in content marketing for your own business	□ No experience in content marketing □ Experience in content marketing about..... □ Other.....
2. Does your business process content marketing?	No Yes, but not currently Yes, and still continuing, about ..... □ Other.....

A Google Form was created with all the questions. The link to the Google Form was emailed to all the participants. After the participants' responses were collected, the mean, percentage and standard deviation were calculated to assess the data. Open-ended responses were combined into groups of similar answers and the response themes for that category then summarised. After acquiring the learner's primary information, the data were examined to arrange the learning management components to suit the learner, including determining the role of the learner, learning activities and evaluation and measurement methods that match age and education, and defining the scope of content that matches the learner's needs and experience.

B. Stage 2: Creating the Online Learning Process Using the Principles of Design Thinking and the TPACK Framework to Enhance Content Marketing Design for Social Enterprise Entrepreneurs

The variables to be studied at this stage include: 1) the quality of the learning management process tool, the learning evaluation and measurement tool, and the measuring satisfaction tool for the online learning process that uses design thinking principles and the TPACK framework for enhanced content marketing design; 2) knowledge, ability in the design process, design work quality in content marketing design and satisfaction with the online learning process.

At this stage, there are two sample groups. The first comprises scholars with expertise in teaching innovation and learning technology, scholars with expertise in teaching design thinking, experts in teaching content marketing, and social entrepreneurs. We employ purposive sampling to select four scholars with expertise in teaching innovation and learning technology, four scholars with expertise in teaching

design thinking, and four experts in teaching content marketing. The second group comprises ten social enterprise entrepreneurs. We randomly selected ten social enterprise entrepreneurs using purposive sampling, based on the following criteria: they belonged to the Stage 1 sample group; they represented five regions nationwide; they had social objectives such as addressing community and social development issues, addressing environmental development issues and creating employment opportunities; and they consented to participate in the research project. Because the learning method is action learning and the experimental time is just 16 hours, the number of the learners in each group is set at 5–10 persons in order to offer comprehensive counsel and gather data through extensive observation and interviews with the learners.

The following are the eight steps for creating an online learning process that utilises the principles of design thinking and the TPACK framework to improve content marketing design for social enterprise entrepreneurs.

1) Using the information from the first stage of the study, determine the expected learning outcomes and learning evidence.
2) Develop design thinking principles for the online learning process using the TPACK framework.
3) Analyse and select the learning components that are appropriate for the process and learners.
4) Design learning activities and assessments.
5) Develop tools for managing the learning process, evaluating and measuring it, and measuring satisfaction.
6) Examine the quality of tools.
7) Try out the online learning process prior to the experiment.
8) Improve the process with suggestions and findings.

We have developed a set of tools that include: 1) the learning management process tool, which includes the online learning process plan, the e-learning web at www.content-learning.com, and the design thinking online toolkit; 2) the tool for learning evaluation and measurement, which includes the content marketing knowledge test form, the content marketing design process design evaluation form and the design work evaluation form; and 3) the tool for measuring satisfaction.

Table 5. Tools created for learning management process and quality measurement

Tool created	Method of quality measurement	Measuring tool/ formula	Level of quality
Online learning process plan.	Twelve scholars and experts determine the consistency/ connection/ inclusiveness/ suitability	Consistency/ connection/ inclusiveness/ suitability evaluation form	Good ($\bar{x}$ = 4.47)
E-learning web: www.content-learning.com.	Three scholars and experts determine the quality	Quality evaluation form	Excellent ($\bar{x}$ = 4.70)
Design thinking online toolkit.			Excellent ($\bar{x}$ = 4.76)

Table 5 shows the tools and quality measurement for the learning management process. The quality assessment used a five-point Likert quality scale with options ranging from "poor" to "excellent". The interpretation of the mean is as follows: 4.50–5.00 = excellent; 3.50–4.49 = good; 2.50–3.49 = fair; 1.50–2.49 = poor; 1.00–1.49 = very poor. All tools must be of good quality or higher.

The online learning process plans include the following: 1) course details, including a framework for content marketing design that utilises the design thinking process, along with course content, learning outcomes and an online learning mode; 2) course content, including seven modules: concepts and principles of content marketing design; content marketing design process using design thinking; empathising with the target audience; defining the problem's framework in content marketing design; generating ideas for content marketing; making the content marketing prototype; and testing and evaluation; 3) determining the duration required for managing online learning; 4) the teaching plan, including a welcome to the online learning classroom, an introduction to the lesson, an experience enhancement activity (learning by doing), a summary by the instructor, a workshop and action, and an evaluation, as shown in Table 6.

Table 6. Components of the teaching plan

Learning activities	Media/tools/technology
1. Welcome to online learning classroom 2. Introduce the lesson 3. Experience enhancement activities– Lecture, discussion, brainstorming, exercise, task assignment, presentation, workshop, work grading, and giving advice (during and after hour) 4. Summarise 5. Workshop	1. E-mail 2. Online 3. Zoom 4. Module 3 on e-web learning www.content-learning.com 5. Template of customer persona from the online toolkits for making design thinking
6. Learning evaluation	1. Knowledge test form 2. Process evaluation form 3. Work evaluation form

We propose the online learning process plan within the TPACK framework to enhance content marketing competency and the consistency/connection/ inclusiveness/suitability evaluation form to four scholars with expertise in teaching innovation and learning technology, four scholars with expertise in teaching design thinking and four experts in teaching content marketing to evaluate the quality of the learning process using the five-point Likert scale. The evaluation results of each detail must qualify at a good level or higher, as shown in Table 7.

Table 7. Evaluation outcome of consistency/connection/inclusiveness/ suitability of the learning management process (n = 12)

Evaluation list	Evaluation Outcome		Quality
	$\bar{x}$	S.D.	
1. Conceptual framework of learning management process	4.42	0.49	Good
2. Main point of the content	4.50	0.50	Excellent
3. Expected learning achievement and desired evidence	4.58	0.56	Excellent
4. Learning objectives	4.50	0.50	Excellent
5. Course structure and learning content	4.50	0.50	Excellent
6. Learner competency evaluation	4.40	0.52	Good
7. Components of learning management	4.53	0.53	Excellent
8. Instructional process	4.33	0.44	Good
9. Experience promotion activity	4.17	0.28	Good
10. Use of media/tools/technology	4.73	0.39	Excellent
Total	**4.47**	**0.47**	**Good**

The evaluation outcome, illustrated in Table 5, indicates that the quality of the process was good ($\bar{x}$ = 4.47, *S.D.* = 0.47). The aspect with the highest mean was the use of

media/tools/technology ($\bar{x}$ = 4.73, *S.D.* = 0.39), followed by expected learning achievement and desired evidence ($\bar{x}$ = 4.58, S.D. = 0.56). The aspect with the lowest mean was the experience promotion activity ($\bar{x}$ = 4.17, *S.D.* = 0.28). The researcher adapted the evaluation outcome to improve the process following the advice of the experts before trying it out, which included adding the learning exchange process while designing content marketing in the experience promotion activity.

Developing the e-learning web using the LMS of Moodle, the researcher rented the hosting and opened the domain name "content-learning.com". The e-learning web consists of learner management, website management and creating lessons. The website structure is a hybrid one based on the hierarchical structure. The order is: 1) homepage; 2) login page; 3) course; 4) lesson menu; and 5) content. The evaluation results from three experts in learning innovation and technology indicated that the overall quality was excellent ($\bar{x}$ = 4.70, *S.D.* = 0.13). User-friendliness and webpage connection had the lowest mean ($\bar{x}$ = 4.00, *S.D.* = 0.13). Therefore, the website was improved based on the advice on user-friendliness and webpage connection by adjusting the fifth page to a linear structure.

We used Google Slides to produce design thinking online toolkits, including a cover page, toolkit information, a user manual and ten templates. The ten templates included the following: 1) customer persona template; 2) SWOT (Strengths, Weaknesses, Opportunities, and Threats) template. 3) template for customer journey; 4) template for identifying problems and solutions; 5) content strategy canvas; 6) content calendar; 7) brainstorming; 8) idea expansion; 9) drafting; and 10) evaluating content making. See Fig. 1 for toolkit sample.

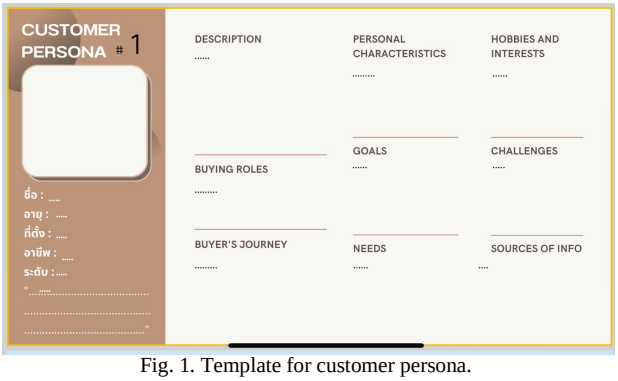

Fig. 1. Template for customer persona.

Table 8 displays the tools and quality metrics used for the assessment and measurement of learning outcomes. The quality assessment verifies the IOC (Index of Item Objective Congruence) and selects questions with an IOC of 0.5 and higher. Next, we conduct the test on five samples to assess reliability using Cronbach's alpha, and we determine the precision (*r*-correlation coefficient) of the evaluation form by involving two evaluators.

Learning evaluation and measurement is divided into three dimensions: understanding of content marketing, understanding of content marketing design process and content marketing design of product.

Table 8. Tools created for the assessment and measurement of learning and quality measurement

Created tool	Method of quality measurement	Measuring tool/formula	Level of quality
Content marketing knowledge test	1) Verification of IOC by three scholars and experts 2) Test reliability (Cronbach's alpha) with five samples	1) IOC evaluation form 2) Reliability formula – Cronbach's alpha $\alpha = \frac{n}{n-1}\left\{\frac{\sum Si^2}{St^2}\right\}$	IOC = 1 α = 0.86
Content marketing design process evaluation form	1) Verification of IOC by three scholars and experts 2) Test reliability (Cronbach's alpha) with five samples 3) Determination of precision (*r*-correlation coefficient) of the evaluation form by two evaluators	1) IOC evaluation form 2) Cronbach's alpha 3) *r*-correlation coefficient	IOC = 1 α = 0.74 r = 1
Content marketing design work evaluation form			IOC = 1 α = 0.98 r = 0.98

To assess content marketing knowledge, we design a subjective test with questions that align with the anticipated learning objectives; we use ten questions. Three experts in content marketing design verify the IOC, selecting questions with an IOC of 0.5 and higher. All questions had an IOC value of 1. Next, we conduct a test with five samples to determine the reliability using Cronbach's alpha, revealing a reliability score of 0.86. Samples of questions to measure knowledge of content marketing are in Table 9.

Table 9. Sample of questions to measure knowledge of content marketing, evaluation issues for content marketing design process and content marketing design work

Knowledge test (5 scale points)	**Design process evaluation** (checklist)	**Evaluation of content marketing design work** (5 scale points)
Knowledge test: 1. Give an example of the objective of making content marketing. 2. Give an example of the method of storytelling in the video content. 3. What is content marketing? What are the steps in creating content marketing?	The design process evaluation form considers: 1. An in-depth understanding of the target group 1.1 Making customer persona 1.2 SWOT analysis 1.3 Making customer's journey	The evaluation form of content marketing design of product considers: 1. The content corresponds with the target group's interest 2. The content is accurate and suited to the brand image 3. The content is communicated precisely and catches the attention

The researcher designs the evaluation questions to align with the anticipated learning outcomes. Three content

marketing experts then confirm the IOC and reliability, selecting questions with an IOC of 0.5 or higher. The IOC of all questions is 1. Then, we conduct the test with five samples to determine reliability using Cronbach's alpha. The results show an acceptable reliability of 0.74. Two evaluators verify the reliability by examining the relationship between two scores and determining the Pearson's correlation coefficient, which is 1. The scores of both evaluations are thus consistent. Table 9 provides a sample of the evaluation issues for understanding the content marketing design process.

For evaluation of the content marketing design work, the researcher designs the evaluation in accordance with efficient content quality. After creating the evaluation issues, three content marketing experts verify the IOC by selecting questions that have an IOC of 0.5 or higher. Evaluation results show that the IOC of all evaluation issues is 1. We test the evaluation issues with five samples to determine the reliability using the Cronbach's alpha method, finding an acceptable reliability of 0.98. Next, two evaluators examine the relationship between two scores to confirm the reliability, obtaining a Pearson's correlation coefficient of 0.98. For this reason, the scores of both evaluations are consistent. Table 9 contains samples of evaluation issues related to the content marketing design work.

Table 10 shows the tools and quality measurement for measuring satisfaction. The quality assessment verifies the IOC and selects questions with an IOC of 0.5 and higher.

We create this evaluation form by studying the documents relevant to the consistency/connection/inclusiveness/ suitability evaluation form creation and design ten evaluation lists to be in line with the components of the online learning process. These include: 1) the design framework; 2) the main point; 3) expected learning achievement and desired evidence; 4) setting of learning objectives; 5) course structure and learning content; 6) measurement and evaluation; 7) learning management components; 8) teaching process; 9) experience promotion activity; and 10) use of media/tools/technology. Three experts in teaching content marketing verify the IOC of evaluation lists; questions with an IOC of 0.50 and higher are selected. The evaluation results show the IOC ranges from 0.67 to 1.00.

Table 10. Tools created for measuring satisfaction and quality

Created tool	Method of quality measurement	Measuring tool/ formula	Level of quality
Learning management process satisfaction evaluation form	Verification of IOC by three scholars and experts	IOC evaluation form	IOC = 1

Prior to conducting the experiment, we tried out (x-o design) the online learning process twice, each time using a sample group of five people who represent social enterprise entrepreneurs in all five regions of Thailand. We organised the online learning process for the sample group in accordance with the created plan. After organising the learning process, we collected data using the content marketing knowledge test form, the content marketing design process evaluation form, the design work evaluation form and the satisfaction measurement tool. We utilised an unstructured interview form to gather diverse recommendations for enhancing the online learning process. We analysed the quantitative data using the mean and standard deviation statistics. (In the try out, the sample group of five people in the first try out group are tested in using the research tool to find the reliability value and improve the usability of the tool.)

C. Stage 3: Experimenting with the Online Learning Process that Integrates Design Thinking Principles and TPACK Frameworks for Enhancing the Content Marketing Design of Social Enterprise Entrepreneurs

This step aims to experiment with developing the ability to design content marketing for social enterprise entrepreneurs by using design thinking in an online learning process within the TPACK framework. We randomly selected ten social enterprise entrepreneurs using the purposive sampling method, based on the following criteria: they belonged to the Stage 1 sample group but not the Stage 2 sample group; they represented five regions nationwide; they had social objectives such as addressing community and social development issues, addressing environmental development issues and creating employment opportunities; and they consented to participate in the research project. The online learning process within the TPACK framework to enhance content marketing design competency serves as the independent variable. Dependent variables are 1) pre-learning and post-learning knowledge of content marketing; 2) ability in content marketing design; 3) the design work score; and 4) the satisfaction of social entrepreneurs. The experiment period is three days (a total of 24 hours).

1) Data collection tools

The developed tool shown in Tables 5, 6 and 7 that is employed to collect the data consists of the online learning process plan; the e-learning website www.content-learning.com; online toolkits for design thinking; pre-learning and post-learning of knowledge tests; content marketing design process evaluation form; content marketing design work evaluation form; and satisfaction evaluation form.

2) Experimental process

We employ the quasi-experimental research approach on a sample group of ten people chosen through purposive sampling to collect experimental data on the online learning process plan, with the goal of improving content marketing design competency. The experimental design is $O_1 \times O_2$.

The experimental process is as follows.

1) Introduce oneself and outline the experiment details.
2) Introduce the course.
3) Complete the pre-test.
4) Organise each learning module's learning activity in accordance with the online learning process plan.
5) Complete the post-test.
6) Evaluation of learning outcomes by two instructors.

3) Data analysis

The descriptive statistics used are percentage, mean and standard deviation (S.D.). The non-parametric statistic used to test the hypotheses is Wilcoxon signed ranks test.

IV. Results

A. Results of Studying General Conditions of Content Marketing and Design Thinking for Social Entrepreneurs

RQ1 was: How skilled are the social enterprise

entrepreneurs in content marketing design, and in what areas might they improve?

From the results of 33 social entrepreneurs, 42.4 per cent were 41–50 years old and 27.3 per cent were 21–30. Each had earned a bachelor's degree. Most (69.7%) generated business content marketing themselves. The majority (87.9%) wanted content marketing. While design thinking had never occurred to 51.5 percent, 42.4 per cent acknowledged limited knowledge and 66.7 per cent acknowledged its value for employment. They also explained that they used design thinking to understand challenges, produce ideas, design innovations, get to know customers, process marketing, solve problems, review and test ideas, and build organisational understanding. Examples of their design work include making operational plan adjustments more explicit, creating company events, designing the organisation logo and designing media for solutions, such as solving community and organisational issues, upgrading products, and understanding customers and their needs.

Table 11. Solutions for improving ineffective content marketing

Inefficiency	Solution for inefficiency
No continuity • Unplanned publication • Unplanned production • Unfinished work • Ignoring continuity • Not knowing how	• Develop a content calendar • Schedule content development
No clear plan or strategy • Missing problem and scenario analysis • Not for intended audience • No rival strategy • Undefined goals • Keyword misuse	• Research and situation analysis • Develop content strategies • Conduct research and scenario analysis • Set goals and KPIs
No promotion • Ignoring the importance • No key distribution channels • No sharing • No budget • Unplanned	• Select channel or format • Publish and promote • Write content strategies • Create content calendar
Non-evaluation and improvement • KPI-less • No follow-up • Goals differ from indicators • Not knowing the tools	• Set goals and KPIs • Measure results and improvement • Write content strategies
Poor content creation • Focus on content rather than customers • Emulate others' content • Too much selling in the content • Unfocused direction	• Deeply understand the target audience • Identify customer problems • Create and produce content • Choose attractive content • Write content strategies • Brand personal analysis • Brainstorm ideas and conceptualise • Measure results and improvement
Single channel • Ignoring the importance • No planning • Insufficient staff • Having no idea how	• Write content strategies • Create a content calendar • Choose the channel or format

We gathered additional information on content marketing issues that individuals should focus on to enhance their knowledge and abilities. We collected data from six articles written by experts in the field of content marketing: 1) "Five common mistakes SMEs make when initiating their own content marketing" [47]; 2) "Five critical reasons behind your content's ineffectiveness" [48]; 3) "Eight content marketing fails that you need to know" [49]; 4) "Five reasons why your content marketing strategy is not effective" [50]; 5) "These four content marketing fails are fixable: here's how" [51]; and 6) "Three reasons you're doing content marketing wrong" [52]. After analysing the cause of unsuccessful content marketing, the researcher examined the guidelines for solutions from experts' articles: Molek [53], Steps Academy [54], Champion [55], Haden [56], Gartner [57], Wongreanthong [58], Content Shifu [59], and The Growth Master Team [60]. The solutions found to each problem are indicated in Table 11.

B. Results of Creating the Online Learning Process Using the Principles of Design Thinking and the TPACK Framework to Enhance Content Marketing Design for Social Enterprise Entrepreneurs

RQ2 was: How can the use of design thinking and the TPACK framework support effective online learning processes and enhance content marketing knowledge, ability in the design process, design work quality?

The researcher has established the expected learning outcomes for this online learning process based on the data gathered from the study of content marketing challenges faced by entrepreneurs in stage 1. These outcomes include learners' ability to adapt design thinking to content marketing design, which includes understanding the target group, identifying problems, generating ideas, creating a prototype for content marketing, and conducting tests and evaluations. We have categorised the learning outcomes indicators into three areas: 1) knowledge and understanding, 2) ability in design process and 3) quality of design work. We employ structured and quality-measured tools to test and assess learners.

We examined the online learning process with five samples before the experiment to ensure quality and applicability. The mean score for content marketing knowledge was 69.6 per cent, for ability in design process 84.29 per cent and for design work 69.6 per cent; all are satisfactory.

The study of satisfaction with learning management shows that the issues with the highest mean were friendly learning environment, promoting learning exchange among the participants and between the participants and the instructor, and content marketing design using the design thinking process facilitating the systematic process ($\bar{x}$ = 4.80, *S.D.* = 0.45), followed by various practice tools for every module that supports the work ($\bar{x}$ = 4.40, *S.D.* = 0.55).

Enhancing the learning process, monitoring changes and adapting it based on the outcomes of the try-out are the key objectives. 1) Make the menu and the link to the homepage more user-friendly in order to facilitate e-learning; 2) Make design thinking online tools more user-friendly by providing learners with extra component possibilities; and 3) Increase the learning activity schedule from two days (16 hours) to three days (24 hours) by adding thirty minutes or one hour to each day, depending on the circumstances.

In the development of this online learning process, we have implemented three mechanisms to enhance content marketing design for social enterprise entrepreneurs: the TPACK framework, learning components and instructional activities, as illustrated in Fig. 2.

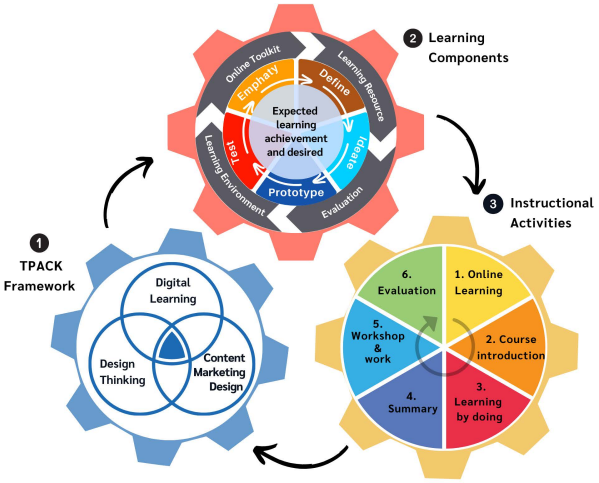

Fig. 2. Three mechanisms of the online learning process to enhance content marketing design competency.

We use the TPACK framework in Fig. 3 to create the online learning process. We chose the following key components for learning: (1) the learning environment; (2) ways to measure and evaluate learning, as shown in Fig. 4; the content marketing design process using design thinking (Fig. 5); (3) online toolkits for the design thinking process (Fig. 6); and (4) online teaching resources (Fig. 7).

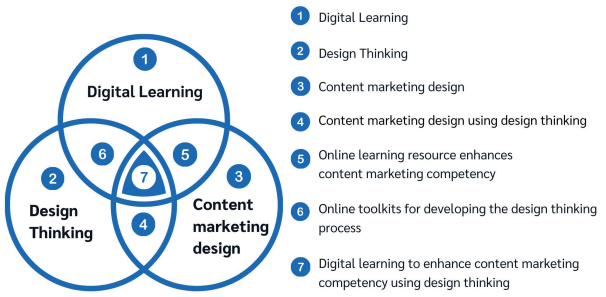

Fig. 3. TPACK framework in this work.

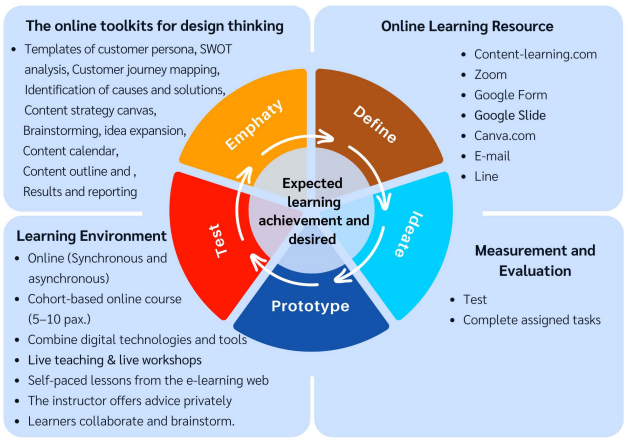

Fig. 4. Learning components of the online learning process.

The TPACK framework in this work incorporates the following core knowledge: digital learning (1), design thinking (2), and content marketing design (3), all of which are integral to the development of the TPACK framework for online learning. These TPACK include designing content marketing using design thinking (4), using online learning resources to enhance content marketing competency (5), using online toolkits for developing the design thinking process (6), and using digital learning to enhance content marketing competency using design thinking (7), as shown in Fig. 3.

We identified and chose the learning components listed in Fig. 4, which are: (1) the content marketing design process using design thinking (Fig. 5); (2) online tools for design thinking (Fig. 6); (3) online teaching resources (Fig. 7); (4) the learning environment; and (5) ways to measure and evaluate learning.

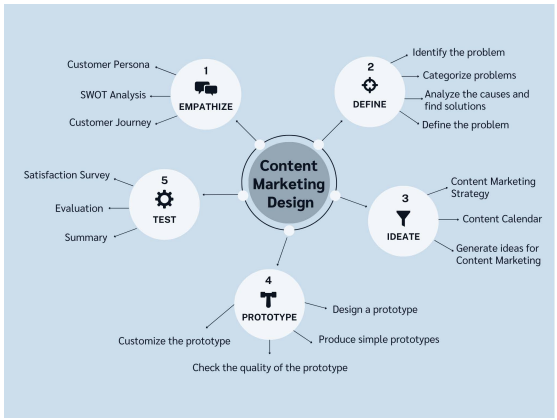

Fig. 5. The process of content marketing design using design thinking.

The structure of using design thinking to develop content marketing design consists of: (1) empathising with the target group; (2) defining the problem's framework; (3) generating ideas; (4) making a project prototype; and (5) testing and evaluating, as shown in Fig. 5.

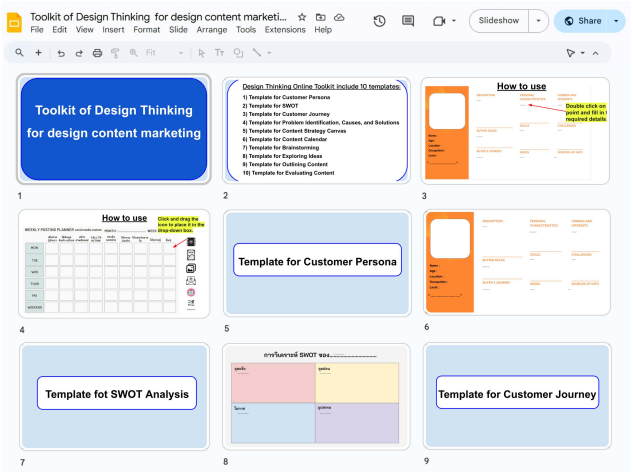

Fig. 6. The online toolkit for the design thinking process.

Fig. 6 shows the online toolkits for design thinking created using Google Slides. It encompasses a variety of templates, including customer persona, SWOT analysis, customer journey mapping, identification of causes and solutions, content strategy canvas, content calendar, brainstorming sessions, idea expansion, content outline and storyboard, as well as results and reporting.

Content-learning.com, a LMS that allows students to self-study, was developed by the researcher using Moodle software. The website provides instructional media that support activities and learning objectives, as shown in Fig. 7.

The instructional activities were divided into: (1) online learning; (2) course introductions; (3) learning-by-doing activities; (4) learning summaries; (5) workshops and work;

and (6) learning evaluations. An example is shown in Table 12.

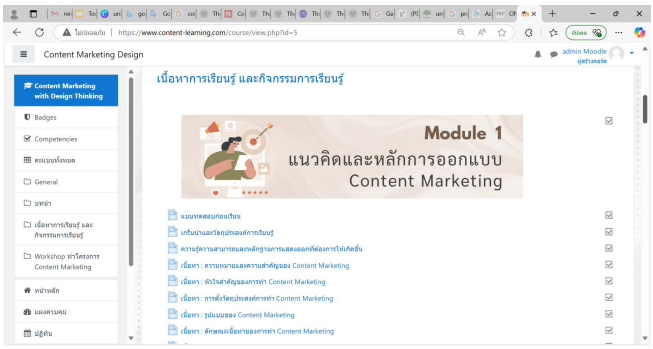

Fig. 7. Example of online learning resource: content-learning.com.

C. Experimental Results

RQ3 was: What is the success and the satisfaction of social enterprise entrepreneurs in various regions after undergoing the online learning process?

The experimental result for the online learning process within the TPACK framework to enhance content marketing design competency for social entrepreneurs indicated that the post-learning score for all three aspects—knowledge and understanding, ability in design process and design work—was higher than that for the pre-learning.

The pre-learning and post-learning scores following the implementation of the online learning process for ten samples are shown in Table 13.

Table 12. Example of instructional activities

Learning activities	Process	Media/tools/ technology
Online learning	1. Send the link to the learners by email two days in advance. 2. Share the link with the learners in the online group before the learning day. 3. The instructor and learners join the online classroom.	1. Email 2. Online 3. Zoom 4.www.content-learning.com 5. Design thinking online toolkits 6. Canva.com
Course introduction	1. Inform of the learning objectives - Learners can make accurate customer personas. 2. Inform of the learning topics - Making customer personas is one of the tools to understand the target group thoroughly (empathy). 3. Inform of the expected learning achievement and what to do. - Learners can make customer personas. 4. State what the learners have to do. - Learners make customer personas for their businesses.	
Learning by doing	1. Learners survey the target group. 2. The instructor lectures on the topic “How to make a customer persona”. 3. Learners try to make customer personas for their businesses using the customer persona template. 4. Learners adjust the customer persona form to suit their businesses. 5. Learners and the instructor reflect via the discussion on the benefits of customer personas.	
Summary	1. Infographic summarised in Module 3 on e-learning.	
Workshop and work	1. Learners make customer personas of their businesses.	
Evaluation	1. Test knowledge and understanding of content marketing. 2. Evaluate the design process. 3. Evaluate the design work.	1. Knowledge test 2. Evaluation form

Table 13. Pre-learning and post-learning scores of the sample group (n = 10)

Sample	Knowledge and understanding (50 points)		Ability in design process (14 points)		Design work (25 points)	
	Pre	Post	Pre	Post	Pre	Post
1	10	34	6	12	10	19
2	12	39	7	14	15	24
3	15	38	3	11	8	18.5
4	10	36	4	13	14	23
5	10	34	5	11	10	18
6	14	40	3	11	9	18.5
7	16	38	3	12	10	19.5
8	12	36	4	11	10	18.5
9	15	38	4	14	11	22.5
10	20	44	8	14	12	24
Mean	**13.40**	**37.70**	**4.70**	**12.30**	**10.90**	**20.55**
S.D.	**3.24**	**2.98**	**1.77**	**1.34**	**2.18**	**2.50**

Table 13 presents the pre-learning and post-learning scores of ten samples. Regarding understanding, the mean pre-learning score was 13.40, the post-learning score 37.70. The pre-learning score for understanding the design process was 4.70, the post-learning score 12.30. The pre-learning score for design work evaluation was 10.90, the post-learning score 20.55.

Fig. 8 presents the pre-learning scores: content marketing design work had the highest average percentage (43.60%), while knowledge had the lowest average percentage (26.80%). The post-learning score for design process ability had the highest average percentage (87.86%), while knowledge had the lowest average percentage (75.40%), reflecting that knowledge had the lowest average pre-learning and post-learning score; ability in the design process had the highest post-learning score and the most increased average score; and design work had the highest average pre-learning score and the least increased average score.

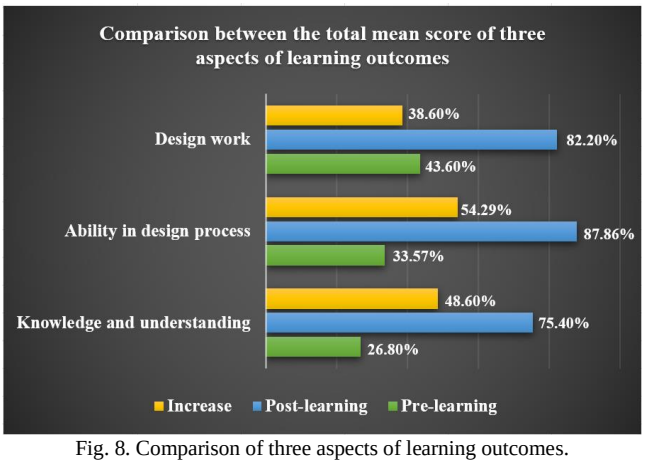

Fig. 8. Comparison of three aspects of learning outcomes.

Test results for the difference in pre-learning and

post-learning scores for the three aspects using the Wilcoxon signed ranks test show that learners' post-learning scores for knowledge and understanding, ability in design process, and design work were higher than that the pre-learning, with a statistical significance of 0.05, as shown in Table 14.

Table 14 and the score difference in tests before and after learning using Wilcoxon signed ranks test show that the post-learning score was higher than the pre-learning ($Z = -2.825$, $p < 0.005$; $Z = -2.816$, $p < 0.005$; $Z = -2.812$, $p < 0.005$), with statistical significance. Therefore, the post-learning score for the entrepreneurs in all three aspects increased significantly.

Table 14. Test values showing differences between pre-learning and post-learning scores using Wilcoxon signed ranks test

Knowledge on making content marketing					
	No. (n = 10)	**Mean rank**	**Sum of ranks**	**Z**	***p*-value**
Negative ranks	0	0.00	0.00		
Positive ranks	10	5.55	55.00	−2.825	0.005
Ties	0				
Ability in content marketing design					
	No. (n = 10)	**Mean rank**	**Sum of ranks**	**Z**	***p*-value**
Negative ranks	0	0.00	0.00		
Positive ranks	10	5.50	55.00	−2.816	0.005
Ties	0				
Content marketing work					
	No. (n = 10)	**Mean rank**	**Sum of ranks**	**Z**	***p*-value**
Negative ranks	0	0.00	0.00		
Positive ranks	10	5.50	55.00	−2.812	0.005
Ties	0				

D. Pre-Learning and Post-Learning Mean Scores in the Test for Knowledge of Content Marketing, Ability in the Design Process and Design Work Quality

Each question in the content marketing knowledge test had a mean score. The pre-learning mean score was 13.4, the post-learning mean score 37.70. The question "Give an example of the objective of creating content marketing" received the highest pre-learning score, along with question 9 ("In what way does the process of drafting the content of the article involve?") ($\bar{x}$ = 1.7, *S.D.* = 0.48). The questions that saw the lowest pre-learning scores were question 2 ("Provide an example of storytelling in the video content"); question 3 ("Describe content marketing. What are the creation steps?"); question 6 ("What is the strategy involved in creating content marketing campaigns? What are the benefits?"); and question 10 ("How to evaluate the content marketing design work?") ($\bar{x}$ = 1.1, *S.D.* = 0.32). The questions that received the highest post-learning scores were question 3 ("What is content marketing?" What are the creation steps?"; question 4 ("What is a customer persona? What are the benefits?"); and question 5 ("What is a customer journey? What are the benefits?") ($\bar{x}$ = 4.1, *S.D.* = 0.32). The questions with the lowest post-learning scores were question 2 ("Give an example of storytelling in the video content") ($\bar{x}$ = 3.3, *S.D.* = 0.52) and question 7 ("How to create the idea of content?") ($\bar{x}$ = 3.3, *S.D.* = 0.48), respectively.

The pre-learning mean score for ability in the design process was 33.57, while the post-learning mean score was 87.85. The issue with the highest pre-learning mean score (100%) was "Generate ideas to create content marketing and design the prototype". The issues with the lowest pre-learning mean scores (0%) were "SWOT analysis"; "Analyse the causes of problems and indicate the solutions"; "Survey the satisfaction"; and "Evaluate and summarise". The issues with the highest pre-learning mean score (100%) were "Making customer personas"; "Creating the customer journey"; "Determining the problems of the target group"; "Analysing the causes of problems and indicating the solutions"; and "Defining the problem framework"' The tasks included "Creating a content marketing strategy"; "Creating a content calendar"; "Generating an idea to create content marketing"; "Designing the prototype"; "Producing the prototype"; and "Validating the quality and modifying the prototype". The task that received the lowest post-learning mean score (30%) was "Evaluate and summarise".

The average score for all five aspects of design work evaluation 10.90 was the pre-learning score, while 20.55 was the post-learning score. "Correspond with the target group's interest" and "Be accurate and suitable for the brand image" had the highest pre-learning scores ($\bar{x}$ = 2.30, S.D. = 0.48). "Have new and distinguished presentation" had the lowest pre-learning score ($\bar{x}$ = 1.90, *S.D.* = 0.57). "Be accurate and suitable with the brand image" ($\bar{x}$ = 4.35, *S.D.* = 0.47), "Correspond with the target group's interest" ($\bar{x}$ = 4.30, S.D. = 0.48), and "Content is about the solution or answering the target group's question" ($\bar{x}$ = 4.30, *S.D.* = 0.63) were the issues with the highest post-learning scores. "Have new and different presentation" had the lowest post-learning score ($\bar{x}$ = 3.45, *S.D.* = 0.50).

Table 15. Learner satisfaction with the online learning process

List	$\bar{x}$	**S.D.**	**Satisfaction**
1. Suggestions and course details are clearly informed and explained.	3.90	0.32	High
2. The description of content in each module is simple, understandable, interesting and explicit.	3.90	0.32	High
3. Use of the e-learning web www.content-learning.com in learning is convenient and appropriate.	3.80	0.42	High
4. The practice in each module uses various tools to accommodate the work.	4.30	0.48	High
5. Using infographics to summarise and review the content makes it more understandable and supports remembering.	3.90	0.32	High
6. Workshop is useful for content marketing work in the future.	3.90	0.32	High
7. The friendly environment promotes learning exchange among the participants and between the participants and the lecturer.	4.50	0.53	High
8. Designing content marketing using a digital thinking process accommodates the systematic process.	4.50	0.53	High
9. The training creates more understanding and enables the creation of content marketing.	3.90	0.32	High
Total	4.07	0.28	High

E. Results for Learner Satisfaction

Overall, learners were satisfied ($\bar{x}$ = 4.07, *S.D.* = 0.28). The aspects that had the highest mean were the friendly learning atmosphere promotes learning exchange among the participants and between the participants and the lecturers, and content marketing design facilitates the systematic process ($\bar{x}$ = 4.50, *S.D.* = 0.53), followed by the practice of each module involves various tools ($\bar{x}$ = 4.30,

S.D. = 0.48). The aspect that had the lowest satisfaction was the use of the e-learning website www.content-learning.com is convenient and appropriate ($\bar{x}$ = 4.30, *S.D.* = 0.48). The satisfaction survey findings are presented in Table 15.

V. Discussion

The findings demonstrate that the post-learning outcomes for the learners are higher than the pre-learning in all three aspects. The aspect with the highest mean percentage and the most increased mean percentage is ability in the design process. In addition, the findings illustrate that the learners agree that designing content marketing using design thinking helps to create a systematic operation, as design thinking is implemented to develop online learning management. This is consistent with multiple studies that deal with design thinking: mindset, process, tools and methods were used to resolve teaching and learning issues. Furthermore, the outcome of developing the entrepreneurs' competency was satisfied [13, 61–63]. Glen *et al*. [64] mention that integrating design thinking into business courses allows learners to set the framework to handle non-structural problems. Furthermore, in creating design thinking, there were many methods and tools to assist the design. In addition, the researcher created the toolkits to use alongside design thinking methods to help the learners to work comfortably and conveniently. Uebernickel *et al*. [28] viewed toolkits as a systematically navigated approach to design learning. Therefore, the novice designer can utilise these techniques as a guide.

The percentage increase in each aspect of the learning outcomes was compared, and it was determined that the learners' design work increased at a lower rate than the other aspects. This may be due to the fact that the learners' design work necessitated additional time to study and practise. The study period was established at three days (24 hours in total) in this investigation. Some learners may require additional time and days to practise or learn from their errors [41]. It is important to note that learners who achieved high pre-test scores in content marketing design work tended to have higher post-test scores than those who achieved low scores. This was observed in samples 2, 4, 9 and 10 (Table 13). The learners' post-test scores increased more than other aspects during the design process. This may be due to the fact that this online learning process has a straightforward design process, as illustrated in Fig. 5, and includes a toolkit that enables learners to practise designing steps in a convenient and easy manner.

The research results discovered that the learners were highly satisfied with the course. This was consistent with suwaphat [65], who investigated learners' attitude towards learning using the design thinking process and found that their attitude was good towards all aspects—content, teaching method and class activities. When considering by aspect, suwaphat [65] noted that learners had the greatest satisfaction with the friendly learning environment, which might influence the synchronous online learning that utilised live teaching and live workshops via Zoom to exchange knowledge, discuss and advise after hours, as needed. Moreover, the online application was used for asynchronous communication. This was in line with the transactional distance idea and the CoI model, which emphasises learner's interaction and management of the online learning atmosphere where the learner and instructor interact, which has a positive impact on the learner's emotions [66]. The synchronous and asynchronous learning formats were integrated to fulfil different demands of learners [67]. As a result, learners were interested in the content, the opportunity to connect with other learners and with the learners and instructor expanded, and participation in a self-learning process was ignited [33–35].

The study of each element of satisfaction showed that the aspect with the lowest score concerned whether the use of e-learning (www.content-learning.com) is convenient and appropriate. After talking with the sample group, it was discovered that e-learning was complicated to use either at registration or at log-in to access the lesson. Moreover, most had never learned via e-learning. This corresponded with Fuady *et al*. [68], who investigated opinions on media used in online learning: Zoom, Google Meet, Google Classroom and LMS. Their findings revealed that the learners agreed that all media were beneficial for online learning, and Zoom was the most intuitive platform because of its simple features. Meanwhile, the LMS was considered difficult to use because of its complex screen. Therefore, the development of the e-learning web for other courses should apply to other platforms that have simple features, such as Google Classroom, in which most learners already have a Gmail account and do not need to log in again. Additionally, they will be able to utilise other Google features straightaway.

Researchers have examined the potential of combining design thinking with TPACK to enhance various learning methods. For example, Rahman *et al*. [69] looked at design thinking in combination with TPACK in education and found that 1) TPACK-integrated design thinking improves the learning process; and 2) design thinking in combination with TPACK in education can take many forms, both in theory and in practice. These findings suggest that Indonesia's education system needs design thinking integrated with TPACK. The integration of design thinking with TPACK fosters students' critical thinking abilities and their creativity in learning. Hungying *et al*. [70] conducted a study that aimed to investigate the relationship between PEPT (Physical Education Pre-service Teacher) design thinking perceptions. Al-Raouf [71] discovered that implementing a training programme based on the TPACK concept influences the growth of design thinking processes and acceptance of Internet of Things technology and virtual laboratory teaching practices among student teachers in the Department of Chemistry, Faculty of Education.

The limitation of this research is the duration of the experiment, resulting in less self-learning for accumulating work experience, making the study results unclear in terms of knowledge, comprehension, content marketing design capabilities, and the long-term effects of adopting the content marketing plan on the business. Consequently, long-term data collection and subsequent evaluation of the sample group are essential to obtain knowledge that is genuinely beneficial for the advancement of social enterprise entrepreneurs.

VI. Conclusion

The study results on developing social enterprise entrepreneurs' ability to design content marketing by using

design thinking in the online learning format showed that the appropriateness of the course was excellent. Furthermore, the quality of the developed online toolkits for building design thinking was also excellent. Moreover, the results illustrated that this online learning course enabled the entrepreneurs to understand, gain ability in the content marketing design process, and produce better content marketing work through a systematic process. In order to manage the course and online learning process, it is necessary to enhance the content and innovative instructional process, which are different from the face-to-face model. Learners' problems and needs must be identified before drafting the updated content structure, arranging the learning process by studying and using ideas corresponding to the learners' experience and thus designing the online learning process and providing user-friendly learning media and technology. Consequently, learners want to participate in learning, which directly impacts their learning outcome and emotions.

Some recommendations exist for future research: 1) Comparison of the three aspects of the learning outcome shows that design work increases the least, which might be a result of insufficient workshop time. For this reason, it is recommended to have more days for the workshop, giving more personal time to the learners to enhance their work, to perform self-learning as desired, and to consult with the instructor directly. 2) Learners should be given training to gain more skills to use the tool for the developed online learning model and be familiar with e-learning for more efficient learning. 3) The learning format should be tested with more sample groups, expanding the time to develop the work and for self-learning. 4) The research results should be publicised and made available to instructors who have skills in technology adaptation and other interested people to develop content marketing and design thinking learning.

A limitation found was that the sample size was small because few volunteers participated in the experiment on the specified days and times.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

JS conducted the research and wrote the paper; KC and SC analyzed the data and checked the data as a whole; all authors had approved the final version.

Ethical Issues

Participation in the study was voluntary for all. Each participant understood the study conditions and provided their consent for the processing of their personal data. The Ethics Commission of the university granted permission to conduct this research.

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