

# HyFlex Learning Ecosystem with Social Emotional Learning

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## Abstract

The model of the HyFlex Learning Ecosystem is with social emotional learning to enhance digital emotional intelligence. The concept is based on the integration of digital learning ecosystems. HyFlex Learning and social emotional learning this research has the objective (1) To study and synthesize the conceptual framework of The HyFlex Learning Ecosystem with Social-Emotional Learning to Enhance Digital Emotional Intelligence. (2) To develop model of The HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence. (3) To study the suitability of The HyFlex Learning Ecosystem with Social Emotional Learning. Research hypothesis: The suitability of the model of The HyFlex Learning Ecosystem with Social Emotional Learning is at a very high level. The participants in this research include seven experts from various institutions, all of whom are specialized in the design and development of instruction models and instruction systems. The results, which are in consistence with the expectation of the researchers, show that (1) This research can serve as a guideline for developing a flexible integrated learning ecosystem that can enhance digital emotional intelligence, consisting of a 6-step social emotional learning process, integrated with the digital learning ecosystem and HyFlex Learning. (2) the overall suitability of the development to the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence (Overall composition) It is at a very high level (Mean = 4.98, S.D. = 0.06, IR = 0.00, Q.D. = 0.00), and (3) Overall, In conclusion, The results of the evaluation certify the suitability of using the model of HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence is suitable for actual use at a very high level (Mean = 4.79, S.D. = 0.57, IQR = 0.00, Q.D. = 0.00).

**Keywords:** HyFlex learning, digital learning ecosystem, social emotional learning, digital emotional intelligence

## 1. Introduction

The Department of Mental Health, Ministry of Public Health, conducted a mental health survey and found that 91% of Thais are experiencing increasing stress levels. According to the hotline data from the Department of Mental Health, which has been providing counseling since the year 2017, it was found that the majority of cases were related to stress or extreme worry, accounting for 40%. Particularly in the working-age group or individuals aged between 15-59 years, it was found that 45% had higher stress levels than normal individuals (Chintanapamote & Sittisarunkul, 2019). The Electronic Transactions Development Agency of the Ministry of Digital Economy and Society conducted (ETDA, 2023) a survey on Thai internet usage in the year 2022 and found that the average daily internet usage hours of Thais is 7 hours and 4 minutes. On average, on work/school days, it is 6 hours and 55 minutes, and on holidays, it is 7 hours and 26 minutes. Thais use mobile phones the most to access the internet. When categorized by occupation, internet users ranked first in the civil service profession, and second in students. The main purpose of internet usage for Thais is communication, which is the reason why Thais use the internet the most. The survey results show a correlation between internet usage and mental health. Thai internet usage is at a high level, and the reason for Thais' internet usage is for communication. The survey also indicates that the majority of communication is often done through platforms such as Facebook, Instagram, and email, as well as Line applications. Communication on the online world can have an impact on users' emotions, so researchers see the importance of emotions in learners very much.

CASEL emphasizes the importance of supporting social and emotional learning, stating that SEL is a process that helps develop social and emotional skills in both students and adults. It can assist in managing emotions, setting and achieving goals, and acquiring the necessary knowledge, skills, and attitudes for self-development. Additionally, it helps in creating understanding and the ability to express opinions to others, building and

maintaining supportive relationships, and making responsible and caring decisions (CASEL, 2021).

HyFlex learning (Raksakul et al., 2023) derives from the combination of the words “hybrid” and “flexible.” It is a learner-centered approach that combines face-to-face learning in a traditional classroom with online learning and self-paced learning at convenient times. This approach allows learners to choose their own learning methods based on their abilities, interests, and environments. Learners have the option to choose their learning locations and preferred learning sources, which increases flexibility in scheduling, locations, and learning methods. Hyflex learning is a popular blended learning approach that offers flexibility for learners, enabling them to learn online and on-site. Learners who study on-site can connect, communicate, and interact with online learners, and they can learn what they need, including blended learning. It is an educational approach that blends the components of traditional face-to-face teaching with online or digital learning.

The Eight Areas of DQ (Digital Intelligence) are the main components of digital intelligence competencies established by DQ Global Standards (DQGS) 2.0, which is an international standard used to teach and assess individuals’ digital intelligence (DQ Institute, 2023). Digital Emotional Intelligence is a part of digital intelligence defined by DQ Global Standards. It is the readiness to manage and express digital emotions in the context of learning, which is important for growth and development of necessary skills in the digital age, enabling learners to lead and learn together in the online community. Digital intelligence is crucial in helping everyone thrive in the online world. Digital Emotional Intelligence comes from the ability to perceive, navigate, and express emotions in interpersonal communication in the digital world appropriately. This ability helps individuals perceive emotions, understand and recognize their own and others’ emotions in digital situations. Navigating emotions allows individuals to guide and manage emotions in online communication appropriately. Expressing emotions enables individuals to express emotions appropriately in communication and interaction with others in the digital world. Having Digital Emotional Intelligence helps individuals create understanding and good relationships with others in the digital environment and helps promote beneficial and creative behaviors in online communication.

From the source and the importance stated above, the researchers studied “The HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence.” The learning ecosystem is a blend of HyFlex learning, which emphasizes flexibility in learning, and a learning system that focuses on digital learning environments. It incorporates the concept of social emotional learning as a learning process to promote digital emotional intelligence in learners. The objective is to develop a model of the HyFlex Learning Ecosystem with social emotional learning based on the concept of social emotional learning to enhance digital emotional intelligence in learners.

## **2. Research objectives and Hypothesis**

### *2.1 Research Objectives*

- 1) To study and synthesize the conceptual framework of The HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence.
- 2) To develop model of The HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence.
- 3) To study the suitability of The HyFlex Learning Ecosystem with Social Emotional Learning.

### *2.2 Research Hypothesis*

The suitability of the model of The HyFlex Learning Ecosystem with Social Emotional Learning is at the high level.

## **3. Methodology**

This research is related to the design and the development of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence, and the research methodology includes the following.

### *3.1 Research Participants*

Seven experts from various institutions which specialize in designing and developing teaching models and teaching systems.

### *3.2 Research Tools and Statistics Used For Data Analysis*

To Develop Model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence, the researchers employed the following research tools, i.e.

- 1) Model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional

Intelligence.

2) The evaluation form on the suitability of Model of HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence. Statistics used for data analysis include mean, standard deviation, inter-quartile range (IQR), and quartile deviation (Q.D.).

### 3.3 Research Methodology

Phase 1: The researcher synthesized the conceptual Framework of Social Emotional Learning Process for Digital Emotional Intelligence. In this phase, the researcher studied, researched, analyzed, and synthesized documents, data, and literature related to (1) Social Emotional Learning, (2) Digital Learning Ecosystem, (3) HyFlex Learning, and (4) Digital Emotional Intelligence, as seen in Figure 1.

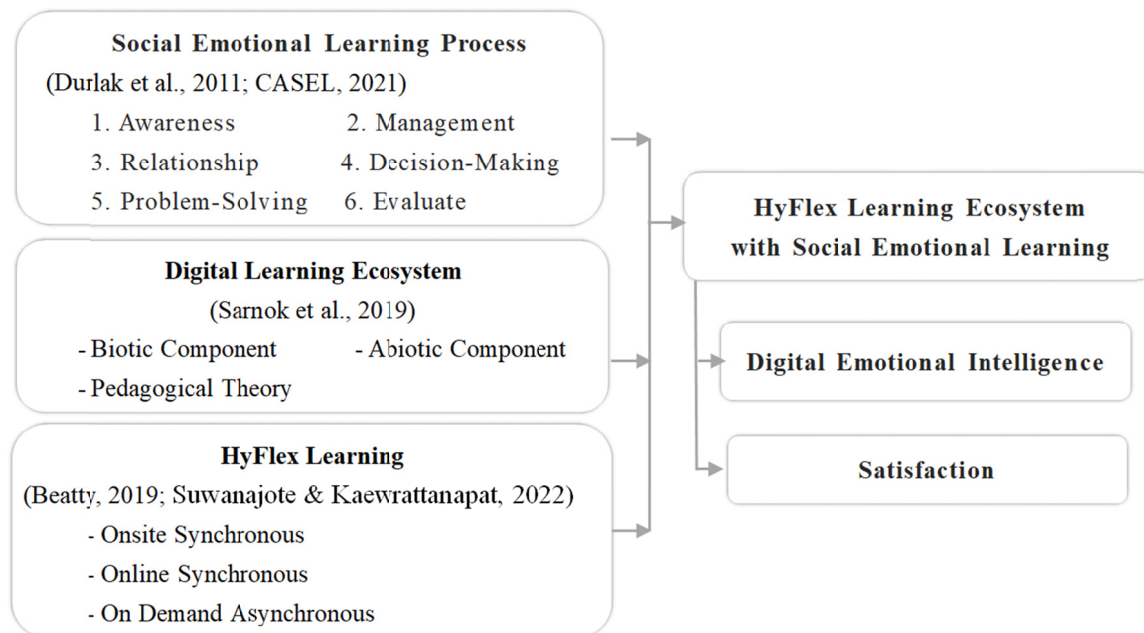


Figure 1. Conceptual framework

After defining the concept, the researcher has studied articles and research related to the elements of the learning ecosystem as follows: (1) Components of digital learning ecosystem. (2) Components of HyFlex learning (3) Social Emotional learning Process, and (4) Components of digital emotional intelligence.

1) Digital learning ecosystem: The digital learning environment consists of two main components. The first component, concerning living things, includes various groups such as teachers, IT support teachers, advisors, professional experience teachers, mentor teachers, and caregivers. The second component, concerning non-living things, includes digital storytelling teaching activities and the Digital Learning Environment, which encompasses hardware, software, and network systems. (Sarnok et al., 2019)

2) HyFlex learning: The term “HyFlex Learning” is derived from the words “Hybrid Learning” and “Flexible Learning,” referring to a blended and flexible approach to learning. (Beatty, 2019)

3) Social emotional learning: Social-Emotional Learning (SEL) according to CASEL (2021) is a process that helps individuals develop essential skills for understanding and managing emotions, relationships, and making effective decisions. It consists of five core components:

3.1) Self-Awareness: Understanding one’s own emotions, thoughts, and values; recognizing strengths and weaknesses, and understanding the impact of one’s emotions and behaviors on others.

3.2) Self-Management: Controlling emotions and behaviors appropriately; managing stress and challenges in life; setting goals and working toward them.

3.3) Social Awareness: Understanding the emotions, feelings, and needs of others; seeing the world from others’ perspectives; understanding social norms and cultures.

3.4) Relationship Skills: Effective communication; building and maintaining positive relationships with others;

working collaboratively with others.

3.5) Responsible Decision-Making: Making thoughtful decisions considering possible outcomes; making ethical and responsible decisions; standing up to peer pressure.

4) Digital emotional intelligence: Digital Emotional Intelligence (Audrin & Audrin, 2023), or digital EQ, refers to the ability to understand and manage emotions and feelings in digital or online environments. Digital emotional intelligence is important for adapting to and efficiently using digital technology in rapidly changing online situations.

Phase 2: Analysis of the Components of HyFlex Learning Ecosystem with Social Emotional Learning.

In this phase, the researchers studied the components of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence as follows: (1) Components of digital learning ecosystem. (2) Components of HyFlex learning (3) Social Emotional learning Process, and (4) Components of digital emotional intelligence. The researchers designed the Digital Emotional Intelligence Assessment based on the components of digital emotional intelligence. They studied, researched, analyzed, and synthesized research related to this, finding five components, as seen in Table 1-4.

Table 1. Components of digital emotional intelligence

Digital Emotional Intelligence	Oluwatofunmi & Amietserwu (2019)	(Wannapiroon & Wattananan (2014)	Hess & Bacigalupo (2011)	Toh & Kirschner (2023)	Inta (2016)	Mayer et al., (2004)	Synthesis results
1. Self-awareness	✓	✓	✓	✓	✓	✓	✓
2. Social awareness		✓			✓	✓	✓
3. Empathy	✓	✓	✓	✓	✓	✓	✓
4. Self-regulation	✓	✓	✓		✓	✓	✓
5. Relationship management			✓	✓	✓	✓	✓

The researchers studied articles and research related to Digital Emotional Intelligence and concluded that it refers to the ability to understand, manage, and appropriately express emotions of oneself and others through digital media. It comprises five components:

- 1) Self-awareness: The ability to perceive and understand one's own emotions, thoughts, and values, and their impact on behavior and decision-making.
- 2) Social awareness: The ability to understand and empathize with the emotions and perspectives of others, including awareness of cultural and social norms.
- 3) Empathy: The ability to understand and share the feelings of others in the digital world.
- 4) Self-regulation: The ability to control and manage one's emotions and behaviors, including coping with stress and adapting to changing situations.
- 5) Relationship management: The ability to build and maintain positive relationships with others, including communication, teamwork, and conflict resolution.

Table 2. Components of digital learning ecosystem

Digital Learning Ecosystem	Reyna (2011)	Wannapiroon & Wattananan (2014)	Sarnok et al. (2019)	Kummanee et al. (2020)	Nguyen & Tuamsuk (2022)	Synthesis results
1. Biotic component						
1.1 Instructors						
1.1.1 Teacher	✓	✓	✓	✓	✓	✓
1.1.2 Support Teams	✓		✓	✓	✓	✓
1.2 Learners						
1.2.1 Students	✓	✓	✓	✓	✓	✓
1.2.2 Friends		✓	✓	✓	✓	✓
1.2.3 Parents Guardians		✓	✓	✓	✓	✓
2. Abiotic component						
2.1 Hardware	✓	✓	✓	✓	✓	✓
2.2 Software	✓	✓	✓	✓	✓	✓
2.3 Network	✓	✓	✓	✓	✓	✓
2.4 Database		✓		✓		✓
2.5 Pedagogical Theories			✓	✓	✓	✓

The Digital Learning Ecosystem (DLE) analysis summarized the components related to living and non-living entities. From the data analysis conducted by researchers studying the Digital Learning Ecosystem, it was found that the DLE can be divided into two main parts: the biotic component and the abiotic component.

The biotic component consists of the following: (1) Instructors: Including teachers and teaching support teams. (2) Learners: Including students, peers, and parents.

The abiotic component consists of the following: (1) Hardware: Referring to physical devices like computers, tablets, and smartphones. (2) Software: Referring to applications and programs used for learning. (3) Network: Referring to the internet and other communication networks. (4) Database: Referring to repositories of information used for learning. (5) Pedagogical Theories: Referring to the principles and methods of teaching and learning as seen in Table 2.

Table 3. Components of HyFlex learning classroom

HyFlex Learning	Beatty (2019)	Kohnke & Moorhouse (2021)	Kaewrattananapat (2022)	Ndlovu & Merisi (2022)	Raksakul et al., (2023)	Athens (2023)	Synthesis results
1. Onsite Synchronous	✓	✓	✓	✓	✓	✓	✓
2. Online Synchronous	✓	✓	✓	✓	✓	✓	✓
3. On Demand Asynchronous	✓	✓	✓		✓	✓	✓

Analyzing the Classroom of HyFlex Learning, researchers gathered data from related research and identified three models: (1) Onsite Synchronous Learning: In this model, students can learn together with peers in a physical classroom as well as with online classmates. All students, including those in the physical classroom, participate in the online classroom, including instructors and teaching teams. (2) Online Synchronous Learning: In this model, students can attend classes online from outside the physical classroom, such as from their own homes. This allows for flexibility in situations where students cannot attend Onsite Synchronous classes, such as when they are ill and need to stay home. Instructors can also teach online from outside the classroom using various remote meeting systems like Google Meet, Zoom, or Microsoft Teams. (3) On Demand Asynchronous

Learning: In this model, students can learn at their own pace, review lesson content on their own, and access recorded lectures. This allows students who cannot attend Onsite Synchronous or Online Synchronous classes to catch up by accessing recorded instructional videos placed on the Learning Management System (LMS) for convenience. This model includes both Onsite Synchronous and Online Synchronous classrooms as seen in Table 3.

Table 4. Social emotional learning process

Social Emotional Learning Process	Durlak et al. (2011)	CASEL (2021)	Wong et al. (2014)	Neth et al. (2020)	Pattanaaveaw (2021)	Katechulasriroj (2019)	Synthesis results
1. Awareness	✓	✓	✓	✓	✓	✓	✓
2. Management	✓	✓	✓	✓	✓	✓	✓
3. Relationship	✓	✓	✓	✓	✓	✓	✓
4. Decision-Making	✓	✓	✓	✓	✓	✓	✓
5. Problem-Solving	✓	✓	✓	✓	✓	✓	✓
6. Evaluation	✓	✓		✓	✓		✓

Analyzing the Social Emotional Learning (SEL) process, researchers studied related research and identified the following steps in the Social Emotional Learning Process:

- 1) Awareness: Awareness is about understanding and perceiving one's own and others' feelings, thoughts, and behaviors. Students must be able to perceive and understand the emotional and social environment around them to start developing this skill.
- 2) Management: After becoming aware of emotions and the environment, management is the step related to controlling and managing one's own emotions. This can be done using various techniques such as finding appropriate solutions, practicing mindfulness, or using breathing techniques to control emotions.
- 3) Relationship: Developing good relationships with others is an important part of the social-emotional learning process. Understanding and empathizing with others' needs helps in creating good social signals and fostering good understanding with others.
- 4) Decision-Making: Making decisions in complex situations is crucial in social-emotional learning. Students must develop skills in analyzing situations, social awareness, and considering all factors that affect decision-making.
- 5) Problem-Solving: Developing problem-solving skills is crucial in social-emotional learning. This involves using analytical thinking, understanding the problem, and finding solutions.
- 6) Evaluation: The final step is evaluating the learning progress. This involves reviewing the progress made and developing one's social-emotional skills. This assessment helps students understand their strengths and areas for further development.

Phase 3: Developing a model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence and study the suitability of the model. In this phase, the researchers took the synthesized components from Tables 1-4 to design the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence and study the suitability of the model of HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence.

Phase 4: This step concerns the study on the suitability of the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence. The researchers used the research tools to study the results after this model had been used by seven participants derived by means of purposive sampling. These participants come from various institutions and all of them are experts specialized in the design and development of instruction models and instruction systems. The mean score range and interpretation of results are listed in Table 5.

Table 5. Statistics and definition of consensus in key studies

Statistics	Definition of Consensus	Reference
<b>Mean</b>		
4.50 – 5.00	Strong agree	Best (1981)
3.50 – 4.49	agree	
2.50 – 3.49	Neutral	
1.50 - 2.49	disagree	
1.00 – 1.49	Strongly disagree	
<b>Median</b>		
≥ 4.00	High Level of Important	Ab Latif, Dahlan, Ab Mulud, & Mat Nor (2017)
≤ 3.50	Low Level of Important	
<b>Standard Deviation: S.D.</b>		
0.00 – 1.00	High Consensus	Henning & Jordaan (2016)
1.01 – 1.49	Moderate Consensus	
1.50 – 2.00	Low Consensus	
> 2.00	Without Consensus	
<b>Inter-Quartile Range: IR</b>		
0.00 – 1.00	High Consensus	Siraj & Ali (2008)
1.01 – 1.99	Moderate Consensus	
> 2.00	Without Consensus	
<b>Quartile Deviation: Q.D.</b>		
0.00 – 0.50	High Consensus	Fong, Ch'ng, & Por (2013)
0.51 – 1.00	Moderate Consensus	
> 1.00	Without Consensus	

4. Results

Design results of a HyFlex learning ecosystem with social emotional learning to enhance digital emotional intelligence as seen in Figure 2.

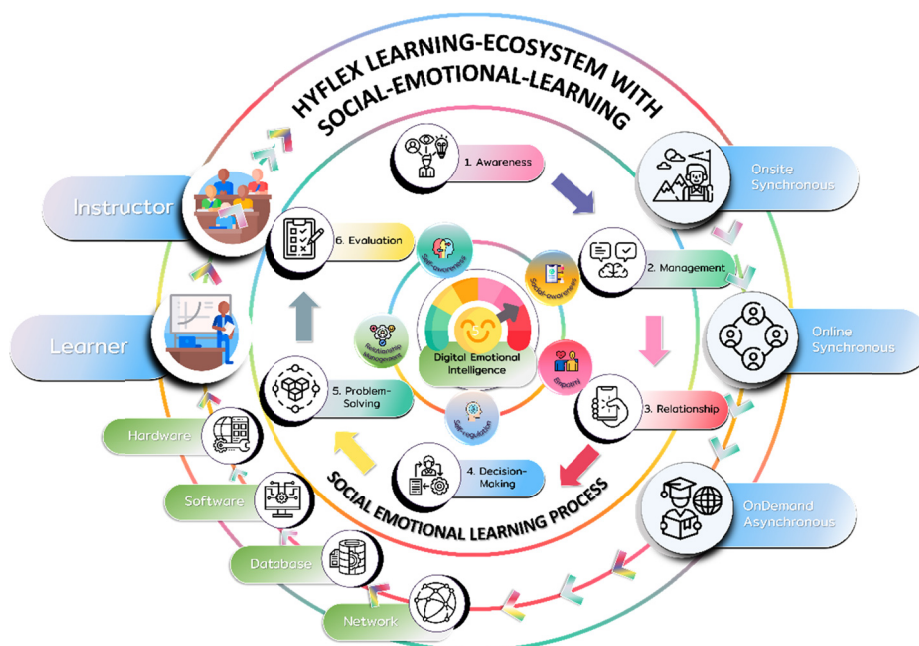


Figure 2. The model of the HyFlex learning ecosystem with social emotional learning

HyFlex Learning Ecosystem with social emotional learning to enhance digital emotional intelligence consists of four main components: a digital learning ecosystem, social emotional learning process, digital emotional intelligence, and HyFlex learning. The classroom format includes three types: Onsite Synchronous Learning,

Online Synchronous Learning, and On-Demand Asynchronous Learning. Additional information about each component is as follows:

- 1) Digital Learning Ecosystem: Comprising six sub-components: Instructor, Learner, Hardware, Software, Database, Network
- 2) Social Emotional Learning Process: Consists of six steps: Awareness, Management, Relationship, Decision-Making, Problem-Solving, Evaluation
- 3) Digital Emotional Intelligence: Comprising five components: Self-awareness, Social awareness, Empathy towards others in the digital world, Self-regulation, Relationship management
- 4) HyFlex Learning: Includes three types of classrooms: Onsite Synchronous Learning, Online Synchronous Learning, On Demand Asynchronous Learning

The HyFlex Learning Ecosystem with Social-Emotional Learning to Enhance Digital Emotional Intelligence is a digital learning foundation that enables effective learning in both academic and social-emotional skills. Instructors structure a digital technology infrastructure that is adequate and up to date, allowing learners to access digital learning resources conveniently and swiftly. The social-emotional learning process is a guideline for developing digital emotional intelligence. Instructors can use this process to organize learning activities, enabling learners to develop essential social-emotional skills necessary for life and work. Digital emotional intelligence is crucial for navigating life in the digital age. Self-awareness, social awareness, empathy, self-regulation, and relationship management are vital for building good relationships and working effectively with others. HyFlex Learning helps learners to learn more efficiently by allowing them to choose the learning method that suits their needs and situations. For example, learners with advanced digital technology skills may choose online learning as their main method, while those with less advanced skills may choose face-to-face learning in the classroom. Learners also have the option to learn or review lessons according to their needs.

Results of the study of the suitability of the learning ecosystem model can be seen in Tables 6-7.

Table 6. Results of evaluation on the suitability of the model of the HyFlex learning ecosystem with social emotional learning to enhance digital emotional intelligence (overall elements)

Items for evaluation	Mean	S.D.	Quartiles			IQR	Q.D.	Level of Agreement
			Q1	Median	Q3			
1. Digital Learning Ecosystem								
1.1 Instructor	5.00	0.00	5	5	5	0.00	0.00	Very High
1.2 Learners	5.00	0.00	5	5	5	0.00	0.00	Very High
1.3 Hardware	5.00	0.00	5	5	5	0.00	0.00	Very High
1.4 Software	5.00	0.00	5	5	5	0.00	0.00	Very High
1.5 Database	4.86	0.38	5	5	5	0.00	0.00	Very High
1.6 Network	5.00	0.00	5	5	5	0.00	0.00	Very High
2. Social Emotional learning process								
2.1 Step 1 Awareness	5.00	0.00	5	5	5	0.00	0.00	Very High
2.2 Step 2 Management	4.86	0.38	5	5	5	0.00	0.00	Very High
2.3 Step 3 Relationship	4.86	0.38	5	5	5	0.00	0.00	Very High
2.4 Step 4 Decision-Making	5.00	0.00	5	5	5	0.00	0.00	Very High
2.5 Step 5 Problem-Solving	5.00	0.00	5	5	5	0.00	0.00	Very High
2.6 Step 6 Evaluation	5.00	0.00	5	5	5	0.00	0.00	Very High
3. Digital Emotional Intelligence								
3.1. Self-awareness	5.00	0.00	5	5	5	0.00	0.00	Very High
3.2. Social awareness	5.00	0.00	5	5	5	0.00	0.00	Very High
3.3. Empathy	5.00	0.00	5	5	5	0.00	0.00	Very High
3.4. Self-regulation	5.00	0.00	5	5	5	0.00	0.00	Very High
3.5. Relationship management	5.00	0.00	5	5	5	0.00	0.00	Very High
4. HyFlex learning								
4.1 Onsite Synchronous Learning	5.00	0.00	5	5	5	0.00	0.00	Very High
4.2 Online Synchronous Learning	5.00	0.00	5	5	5	0.00	0.00	Very High
4.3 On Demand Asynchronous Learning	5.00	0.00	5	5	5	0.00	0.00	Very High
Overall average	4.98	0.06	5.00	5.00	5.00	0.00	0.00	Very High



From Table 6, it was found that the overall suitability of the development to the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence (Overall composition) It is at a very high level (Mean = 4.98, S.D. = 0.06, IQR = 0.00, Q.D. = 0.00) In conclusion, the model of the HyFlex learning ecosystem with emotional social learning has all the elements that can be used as a guide for further development of the HyFlex Learning Ecosystem with Social Emotional Learning.

Table 7. The results of the evaluation certify the suitability of using the model of HyFlex learning ecosystem with social emotional learning to enhance digital emotional intelligence

Items for evaluation	Mean	S.D.	Quartiles			I.R.	Q.D.	Level of Agreement
			Q1	Median	Q3			
1. The model of the HyFlex Learning Ecosystem with Social Emotional Learning model is suitable to enhance digital emotional intelligence.	4.86	0.38	5	5	5	0.00	0.00	Very High
2. The model of the HyFlex Learning Ecosystem with Social Emotional Learning is appropriate for actual use.	4.71	0.76	5	5	5	0.00	0.00	Very High
Overall average	4.79	0.57	5.00	5.00	5.00	0.00	0.00	Very High

Table 7 shows that 1. Experts are of the opinion that the model of the HyFlex Learning Ecosystem with Social Emotional Learning is appropriate to enhance digital emotional intelligence. It is suitable at a very high level (Mean = 4.86, S.D. = 0.38, IQR = 0.00, Q.D. = 0.00) 2. Experts are of the opinion that the model of the HyFlex Learning Ecosystem with Social Emotional Learning. It is appropriate to put it into actual use. It is suitable at a very high level (Mean = 4.71, SD. = 0.76., IQR = 0.00, Q.D. = 0.00). Overall, In conclusion, The results of the evaluation certify the suitability of using the model of HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence is suitable for actual use at a very high level (Mean = 4.79, S.D. = 0.57, IQR = 0.00, Q.D. = 0.00)

## 5. Conclusion and Discussion

According to the results of the suitability study of the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence, it was found that the overall suitability of the development the model of the HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence (Overall composition) It is at a high level in conclusion, the model of the HyFlex learning ecosystem with social emotional learning has a full range of elements that can be used to guide the further development of a HyFlex Learning Ecosystem with Social Emotional Learning. The results of the evaluation certify the suitability of using the model of HyFlex Learning Ecosystem with Social Emotional Learning to Enhance Digital Emotional Intelligence.

The model of the HyFlex Learning Ecosystem with Social Emotional Learning aims to provide a comprehensive framework for developing flexible blended learning systems. This model is expected to help learners develop emotional intelligence in digital environments by engaging in activities that promote social emotional learning. It involves managing digital learning using a Learning Management System (LMS) to promote digital learning and enhance digital emotional intelligence. This approach aligns with the research by Lertbumroongchai (2020) which states that social emotional learning processes promote collaborative learning in a social setting, based on components such as self-awareness, social awareness, self-management, responsible decision-making, and relationship skills. These components are part of a learning framework that promotes digital emotional intelligence. Educators can choose learning media based on technologies that evolve with social emotional learning processes.

This research can serve as a guide for designing and developing HyFlex learning ecosystems with social emotional learning to enhance digital emotional intelligence. This concept is based on a blend of digital learning environments, flexible blended learning, and social emotional learning to promote learners' digital emotional intelligence.

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### **Authors contributions**

Dr. Rattanakul Kongpha and Dr. Kanita Hinon were responsible for the study design and revising the manuscript. Dr. Panita Wannapiroon was responsible for data collection and drafting the manuscript. All authors contributed equally to this research, read, and approved the final manuscript.

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