Using Technology and Drama in Education to Enhance the Learning Process: A Conceptual Overview

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***Abstract*—This research aimed to study procedures and methods of integrating the learning process through images that can be experienced with dramatic science (DS). This study used qualitative research to analyze research methods, papers, and theories related to the concepts and learning theories of drama in education (DIE). After that, qualitative data analysis was used to analyze the content. The results showed that using DIE to teach and as a tool for learning management is an excellent vehicle in human development and creating change. Moreover, drama reflects the artistry and imagination of the creators, and when used as DIE, it can be carried out in a sequence of steps: 1) the preparation stage for the DIE learning process; 2) the drama production stage using theater or drama performances, YouTube enactments, or streaming videos; 3) the learning evaluation stage; and 4) the continuing development and improvement stage. In addition, it was found that the main factor affecting the integration of the learning process with DE is teaching managers (teachers), who must most importantly have good communication skills and creative skills.**

***Index Terms*—Drama in education, imagination, learning, learning integration, science of drama.**

I. Introduction

Education is concerned with much more than simply learning facts, as it also socializes us to cultural norms and expectations [1]. We learn cultural expectations and standards, which are reinforced by our teachers, textbooks, and classmates. Schools can be agents of change while also providing students with communication skills, social interactions, and work discipline, to create paths to independence. Finally, as we have seen during the past two years of lockdowns due to the coronavirus disease 2019 (COVID-19) pandemic, educational technology in its many digital forms has become a critical element under what many in Thailand describe as the *New Normal*.

A. Effective Learning

Effective Learning (EL) is viewed in different ways by scholars and educators. However, most would agree that EL needs to be thought-provoking, challenging, relevant, and meaningful to a student's life [2], [3]. Moreover, EL is related to how well a learning experience is designed in helping learners experience an intellectual payoff [4].

This is consistent with *resistance theory*, from which EL is stated as being achieved when there is less resistance and relaxation [5]. Therefore, EL in today's era requires integrating the learning process through the surrounding environment and the use of imagination and Dramatic Science (DS) to create a new learning culture that brings maximum benefits to the education system in the future.

B. Educational Technology

Many studies have identified the advantages of using Information Communication Technology (ICT) in education, primarily because of the lockdowns of traditional classrooms from the COVID-19 global pandemic [6]. Therefore, this has forced educational institutions to adapt their curricular processes to accommodate modern online teaching methods and learning styles while emphasizing supporting learning environments to connect and integrate learning with learners so that all can be successful in learning.

Moreover, ICT's adoption and use in *personalized learning* online has been found by a Rand study to increase significantly owing to the rapid advances in technology platforms and digital content [7]. Another Thai study [8] has pointed out that digital transformation is moving to the forefront in the strategic planning for multitudes of organizations, government agencies, and educational institutions.

This is consistent with Khunsang and Chaisiri's [9] study, which reported five teacher-related competencies for student teaching, majoring in educational technology in Thailand. These include the *teacher's knowledge of ICT*, their *skills in using ICT*, their *self-concept* and *traits*, and finally, their *attitudes and motivations*.

Moreover, teachers can now adapt their lessons to their learners' needs, and by using technology, instructors can break away from traditional passive instructional models and make their classes more interactive [10]. Thus, active student response increases student engagement and learning outcomes while decreasing disruptive behavior.

C. Drama in Education

Over the past decades, a slow but steady transition has occurred from what was commonly called "*applied theater*" to what is becoming the use of Drama in Education (DIE) practices outside the classroom [11]-[15]. This is consistent with McGregor and Precious's [16] book "*Dramatic Science*," which describes in detail how the science teacher can use drama to teach science.

DIE has also been used as a tool to manage learning at the individual level, community level, and social level. Drama activities have been applied to the work of learning and human development in many dimensions. This includes education, community, public health, and those who use DIE to believe that drama is a valuable tool for human

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development and can make a difference [17], [18]. Additionally, the drama process can be used in teaching and learning to develop the skills necessary for living in the 21st century [15], [19], [20].

Recently, according to Braund and Reiss [21], more research is being devoted to the fusion between the sciences and arts, with the introduction of a STEAM curriculum rather than a STEM curriculum—that is, adding "Arts" to "Science, Technology, Engineering, and Mathematics."

Drama arises from visualizing human experience and imagination by creating a story and presenting it in the form of a show that can be perceived and touched. In addition, DS brings together various fields of arts, such as music, design, composing, and directing. As such, DS is a profound, sensitive, diverse, and aesthetic body of knowledge. In addition, drama also reflects the artistry and imagination of the creators concretely through the play or the characters.

Therefore, one function of drama media is "*education*" because drama helps us understand life and the human mind. It also allows us to understand people and everything around them, including society, nature, and the rules of society. This, in the end, will lead to an understanding of us and others. This type of learning is because learners can relate their experiences in the fantasy world of drama to the everyday world [22]. Thus, DS creates learning for human beings.

Theatrical performances have always been associated with culture and a people's way of life. Moreover, drama is a performance that uses language and gestures, which helps us see the relationships between people's lives and society. Drama is also a tool that can highlight people's life in society according to their imagination. If observed, you will find playwrights portraying the struggles and tragedies from which they live. Roland Barths has also defined *drama* as a type of communication machine [23]. While not in operation, this machine is hidden behind a curtain; however, when this machine is launched, it immediately sends a number of messages to us.

Further, drama successfully produces positive effects on achievement, self-confidence, and motivation in individuals [24]. For those who can remember or watch reruns of 1960s' TV shows, such as Star Trek, Lost in Space, the Time Tunnel, and Voyage to the Bottom of the Sea, it is easy to see how drama can be a facilitator of career and travel dreams.

Therefore, it is not hard to imagine how these home TV dramas then become influencers in selecting one's future education discipline and career choice. Due to these futuristic and imaginative TV dramas, one can only wonder how many 1,000s of individuals became scientists, astronauts, astronomers, or oceanographers.

Thus, the drama process and its use in education can be an intellectually creative space that produces positive, multidimensional changes for the participants' external and internal operations [25], [26]. As drama study dimensions are applied to the learning process, its evolution as a tool and the technology used to implement it will continue to evolve. Dreams and imagination are not only the purviews of science fiction writers, such as Jules Verne or Isaac Asimov, but also the dreams and imagination of countless 12-year-olds.

D. Imagination in Learning

Imagination comes from the Latin verb *imaginary*, meaning "to picture oneself," which can be further explained as the mental ability to portray an idea or creative idea without reason.

In his book *Poetics*, Aristotle mentions that the beginning of drama is born from the instinct of imitation of human beings. Humans can surpass the entire animal world and thus learn from life's experiences [27].

In a more contemporary world, Bayram [12] in Turkey detailed the many advantages of the use of DIE but stated that the most important was enabling the healthy expression of feelings, the development of a child's creative imagination, independent thinking, expression of thought, and finally, the development of social awareness and collective working consciousness of the child.

Furthermore, imagination helps develop a child's creative, social, emotional, physical, linguistic, and problem-solving skills [14]. These concepts are additionally supported by research from Turkey by Tombak [28], which noted that for preschool learners, drama education's advantages, in addition to the list above, have a significant effect on a child's self-confidence.

In Thailand, Symphony [29] discusses the seven elements needed for 21st-century education. As part of this list, the author states the need for creative activity, in which students can express their creativity and imagination emotionally. Moreover, it is suggested that drama and role-playing should be used to reinforce these activities.

Therefore, the literature suggests that by letting your thoughts be free, the creation of something new or different is possible as imagination acts as a stimulus and a satisfying mood. Further, by creating images in thoughts and expressing them by various means, such as drawing, inventing, or poetry, imagination can thus be "*touched*" and becomes "*real*" (Fig. 1).

Fig. 1. Application of real-world drama in education in first-aid training.
Source: https://pantip.com/topic/37670578

II. Literature Review

A. Theoretical Concepts of Learning

Learning means the transformation of a person through experience, which causes behavioral change. It refers to both

direct knowledge and indirect experience [30]. This is consistent with Bower and Hilgard [31] who said that *learning* is the process of changing behavior because of experience and training. However, this does not include behavioral changes caused by instinctive responses, the effects of drugs or chemicals, or innate human reflexes. Learning is also best understood as an experiential process that produces a relatively permanent change in behavior not due to maturity or intuition [30].

Therefore, we can conclude that "*learning*" is the process, by which human behavior changes, from which thoughts or cognitive changes result from experiences and interactions with the environment. This includes our ability to learn through hearing, seeing, touching, reading, and using technology. We then take these data for analysis or processing, which results in a change in knowledge, emotional regulation, and skill. Therefore, this is learning in a new way.

Furthermore, in Schunk's [32] discussion on learning events, the author classified five primary learning outcomes as internal and external. There are prerequisite skills and cognitive processing requirements for internal conditions. For *external conditions*, there are environmental stimuli that support the learner's cognitive processes. Therefore, teachers must specify as wholly as possible both types of situations when designing instruction.

Jakobson also developed six functions that were part of all human language communications [33]. These were labeled as *referential*, *poetic*, *emotive*, *conative*, *phatic*, and *metalinguistic*. Expressed in another manner, communications consist of the context, beauty of speech, emotion, vocatives and imperatives, contact and closing speech, and finally, the "*code*" of speech. Thus, the drama-based learning process can facilitate EL, because drama, as learning and teaching tool, can be used across many dimensions, whether learning about history, art, philosophy, language, or literature.

The learning theory concepts can be divided into five main groups: *Behaviorism*, *Cognitive Learning* theories, *Eclecticism Learning* theories, theories of *Humanistic Learning*, and theories of *Meaningful Learning*. These learning theories are briefly described as follows.

B. Behaviorism

The key idea behind *Behaviorism* is that all behaviors are learned through interaction with the environment [34], [35], from which behavior is influenced and learned from external reinforcements rather than internal reinforcements.

Moreover, *behavioral learning theory* is the basis of observable and measurable psychology, with positive reinforcement being a popular element. The classical conditioning found in Pavlov's [36] experiment suggests that rewards directly motivate learning behaviors.

Thorndike and Thorndike-Christ also describe learning as *rewarding* and a process between stimulus and response [37]. Thus, when learners encounter a problem, they react speculatively (trial and error). Moreover, the learner may experiment with many methods until finally successful, whereby learners can relate stimuli or problems with appropriate responses.

In addition, Skinner [34] explains that to make learning more effective, it may be necessary to clarify how the relationship between the stimulus and the response occurs by providing a reinforcement stimulus after the condition has been met. Thus, all reinforcement contributes to a more intense reaction to stimuli by the body, which results in more responsiveness to the learning process.

C. Cognitive Learning (CL)

CL focuses on studying interactions or responses between external stimuli transmitted by various media and internal stimuli. The areas involved in CL thinking processes consist of 1) attention, 2) perception, 3) memory, 4) rational thinking, 5) imagination, 6) support plan, 7) decision making, 8) problem solving, 9) classification, and 10) interpretation.

Thus, *CL processes* focus on determining objectives, planning, intentions, thoughts, and memory. The selection and definition of the stimuli derived from experience and how the learner uses it as a tool for knowledge discovery depends on the learner's development. The learning manager must manage the data environment, objectives, and questions, and hope that learners will find answers for themselves [38].

Bruner also divides learning into three forms, which involve forms of cognitive processing: 1) enactive, 2) iconic, and 3) symbolic or learning from symbols [39], [40]. This is a more advanced developmental stage that leads to the ability to understand the relationship between things. It also allows the ability to come up with more complex ideas and use linguistic symbols or images, which leads to the peak of cognitive skills.

D. Eclecticism Theory

Interestingly, Larsen [41] has written that all psychological theories could be viewed as stories from a postmodern perspective. Labeling psychological theories as interwoven theory-stories, Larsen suggests that stories mirror the authors' life experience as well as their sociopolitical context. Finally, by viewing theories as stories, eclecticism is proposed to give the tools necessary to explore alternative stories when liberating clients (medical patients) from oppressive storylines.

In a similar finding, Morrone and Tarr [42] stated that student learning is improved by "theoretical eclecticism," which the authors define as an educator's use of different learning theories to provide students with the instructional support they need to succeed.

Similarly, Brown [43] proposed "*principled eclecticism*," in which educators choose what works within their dynamic contexts based on research knowledge and sound theories. However, as Richards and Renandya [44] point out, the gap between policy and reality within China is difficult.

E. Theory of Humanist Learning in Education

The concept of student-centered learning is an example of *Human Learning in Education* in action. This theory and approach in education take root in humanistic psychology. The key concepts focus on the idea that children are good at the core and that education should focus on rational ways to teach the "whole" child [45].

A related theory in this group is the *Hierarchical Theory of Human Needs* [46], explaining that human needs are

hierarchical by nature. There is also a need to learn to know oneself and develop oneself.

Rogers described each learner as a person with high potential and motivation for self-improvement [47]. In learning, the process should be emphasized, and the learning environment should be warm and safe.

This group of theorists emphasizes being human and views humans as valuable resources, virtuous, capable, and demanding. Moreover, each individual has intrinsic motivation to develop their potential. If a person is given freedom and liberty, humans will try to establish themselves to become complete human beings. They also believe that human beings are free to learn in a positive environment with the support or encouragement of the learning manager.

F. Theory of Meaningful Learning

The theory of *Meaningful Learning* relies on a complete understanding of the information being conveyed and how that information is connected to other previously learned knowledge. Thus, education is more meaningful if learners can relate to something they have known before. According to this theory, the principle of learning management and teaching is that concepts must be presented to learners before teaching the content. This will assist students in learning and understanding the meaning of the content.

Learning, no matter which group theory is developed, has the same thing. Learning is the process of creating a permanent change in the behavior of learners by changing from ignorance to knowing (Fig 2).

Fig. 2. Drama and storytelling activities for early childhood.
Source: Faculty of Education, Thaksin University

From the above information, the researchers can present the elements of the learning process as a diagram, as shown in Fig. 3.

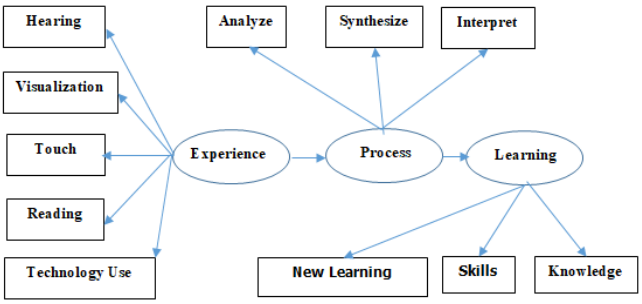

Fig. 3. Learning process components.

III. Research Methods

According to Rogers [48], the literature review has become more critical than ever because of the accelerating nature of knowledge production, making it hard to keep up with state-of-the-art ideas and concepts while being at the forefront of research. Thus, to assess the collective evidence for this study, the authors conducted an extensive review of literature in the Thai and English languages concerning the concepts and theory related to learning theory, DIE and related sciences, and the use of DS and learning.

Thereafter, a *content analysis* was conducted, in which, after the *systematic collection* of the texts, a *qualitative analysis* was conducted focusing on the interpretation, comprehension, and coding/categorization of the words, themes, and concepts within the texts [49]. Finally, the results were analyzed. Document analysis yields data organized into major themes, categories, and case examples specifically through content analysis [50].

IV. Results

Learning is an essential process in the education system, which is the process that causes individuals to change their behavior or thinking. It is also an intellectual transformation from ignorance to knowledge, which can be facilitated by social media and the development and use of technology. As a result, the learning process must be developed.

EL in today's era requires integrating the learning process with the surrounding environment, including imagination. Drama has always been associated with the way of life of people. Drama can be used as a tool to study people's lives in society according to their imagination. DS has, therefore, been used as a tool to manage learning at the individual level, community level, and social level.

This is because the drama process can be an intellectual, creative space that creates a positive change in both the external and internal dimensions of the participant or learner. In addition, drama is a medium that reflects the artistry and imagination of the creators, which appears to be "*real*" or "*concrete*" through the play or the characters.

Thus, we may call this the creation of "imagination," which becomes real and concrete in how it is perceived and touched. The science of drama creation consists of various fields of knowledge. Whether it is learning about history, art, science, philosophy, language, or literature, the integration of the learning process through imagination using DIE and DS can be performed in a sequence of steps. These include the following stages.

A. DIE Preparation Stage

From the study's analysis, the authors propose the following four stages in the use of DIE:

1) *Determination of objectives* is essential because it will give the overall operation a clear direction and help managers learn how to act. Learning managers also need to determine the content that needs to be managed; for example, when to manage history learning, it is necessary to define the objectives of presenting the history at any time to help the search query be as relevant as possible.
2) The *learning management plan* for drama creation needs to define a working group and allocate responsibilities.

This can include things such as actors, acting directors, screenwriters, and stage creators. The number of individuals involved depends on the scope of the established learning activities.

3) *Equipment filming preparation* depends on whether the lesson is based on recording a video or it is designed for a classroom play. However, given Thailand's and other countries' move to online education under the "new normal," even the use of video, which is subsequently uploaded to a class-initiated YouTube channel, can be an excellent way to share resources, expenses, and knowledge.
4) The *learning assessment preparation kit* should be in accordance with the specified learning objectives, such as an assessment form or a test.

B. DIE Production Stage

The drama production stage can use a variety of formats. These include older, more traditional approaches, such as theater or drama performances, or newer formats, such as YouTube enactments or streaming videos, from which the Internet and social media platforms can be used. A viewer's participation is established in all forms, thereby creating a more authentic or concrete involvement with the drama being undertaken.

C. DIE Evaluation Stage

This stage evaluates and measures the learning outcomes that occur by allowing learners to do assessments or tests.

D. DIE Development Stage

The results of the learning assessments or tests can be analyzed, from which the data can be used for further improvement of the learning process through the tangible imagination that can be experienced with DS.

Integrating the learning process through imagination and drama use in DIE and DS is presented in Fig. 4.

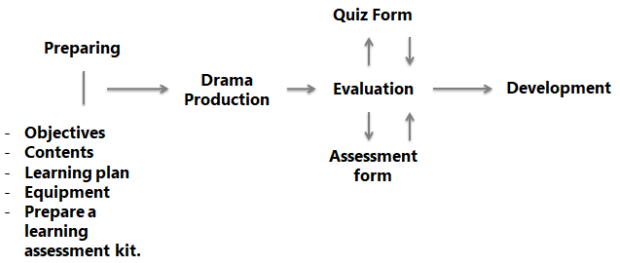

Fig. 4. The sequence of steps for integrating drama in education.
Source: The Authors.

V. Discussion

Integrating the learning process through imagination with DIE and DS is a combination of knowledge from the theory of learning and science [18]. This is consistent with Chamchoy [22], whose study on the use of DIE in Thailand suggested that teachers needed attributions that used dramatic arts as a tool for creating learning-needed empathy, the ability to develop learner motivation, and the courage to participate, communication skills, and creativity.

Further, cross-disciplinary DIE integration requires taking ideas from multiple learning theories. This is in line with educators' use of eclecticism theory [41]–[44].

Moreover, when we link Bruner's ideas to the use of DIE, we find the idea that even early learners can be taught any material so long as the instruction is organized correctly [51]. This study is also in agreement with the three learning concepts from Bruner, in which EL is dependent on being *action-based* (enactive), *image-based* (iconic), and *language-based* (symbolic). Thus, these are excellent principles in the adoption of the use of DIE and DS.

Thus, the most crucial element in ELusing DIE and DS is the teacher who manages the learning. Teachers must have essential qualities, namely, communication skills, creativity, and the ability to analyze and understand learners [22], [23]. In this way, the integration of the learning process through the imagination can be experienced with drama. It is the process of creating good EL and eventually becoming a new learning culture.

It should be noted that DIE is becoming mandatory in progressive educational environments, such as Iceland, where the Ministry of Education (MOE) has decreed that all compulsory level students should be allowed to use dramatic expression in their schooling, which contributes to their self-esteem and other life skills [52]. However, as Iceland's MOE Professor Anne Bamford points out, most teachers have great hesitancy in teaching drama and feel that they are unprepared to do so [53]. Thus, teacher training is essential when drama is expected to be used for educational purposes.

Furthermore, *teaching managers* (teachers) must also consider the essential factors that affect the process of creating learning through concrete imagination through DIE and DS. Essential characteristics include teaching qualifications that include training or experience in communication skills and creativity and having the ability to analyze and understand learners while motivating students to learn and dare to participate. Teachers must also advocate linking classroom drama experiences to learners' life contexts and enabling learners to connect experiences in the tangible fantasy world of drama with everyday life. In terms of the learning area factors in using DS, there are specific properties, in which the real space and an imaginary space are overlapped.

Ragnarsdóttir and Þorkelsdóttir also found that plays were shown to be particularly beneficial for students with learning disabilities [52], as well as immigrant students. The authors further stated that drama gives students the courage to experiment with imaginative activities, such as games, role-playing, or storytelling, without fear of affecting their real-life outside the classroom.

This is also in line with the results of another study [22], which found that contemporary perspectives on the status and direction of the body of knowledge of academics and practitioners use drama as a learning tool. There is also a consensus that this body of knowledge has expanded to a broader dimension than in the classroom nowadays. It is integrated with the field of applied drama, a branch that covers the use of drama for human development in various contexts. As a result, the body of knowledge in drama is interdisciplinary, integrating across sciences and other disciplines between fields of study, and dramatic arts.

Therefore, successful production and integration of drama

into the education and learning process requires the following steps:

1) The preparation stage for the DIE learning process.
2) The drama production stage uses theater or drama performances, YouTube enactments, or streaming videos.
3) The learning evaluation stage.
4) The continuing development and improvement stage.

Finally, the future is limitless to those who can imagine it. In the words of Dubai's Prime Minister Sheikh Mohammad bin Rashid Al Maktoum, "*The future belongs to those who can imagine it, design it, and execute it. It is not something you await, but rather create*" [54].

VI. Conclusion

The process of learning through imagination can be experienced through DS and DIE. It integrates learning theories, including behaviorism, CL, eclecticism, and humanist learning, with images that can be experienced through DIE. However, learning management must set clear learning objectives and content designations, including defining a working group and allocating responsibilities. This can include the actors, acting directors, scriptwriters, theater scene creators, and equipment preparation. Preparing learning assessments is also based on defined learning objectives. The drama production stage can use a variety of formats. These include older, more traditional approaches, such as theater or drama performances, or newer formats, such as YouTube enactments or streaming videos, from which the Internet and social media platforms can be used. A viewer's participation is established in all forms, thereby creating a more authentic or concrete involvement with the drama being undertaken.

VII. Suggestions and Limitations

Educational institutions should take DIE and DS as a profound teaching and learning process at all levels and across all disciplines. Although the teaching and use of DIE is as old as humankind, today, technology, social media, and online education have shifted the medium customarily used from the stage to YouTube and smartphones.

As such, although the authors reviewed decades of literature related to the use of DIE, there has been a major and ongoing shift in the terms being used to describe it, how it is undertaken, from which medium it is presented, and even if the characters are real or not (avatars, etc.).

Therefore, it is suggested that future studiesstudies review how educators and students view the use and effectiveness of DIE and how and where the productions are produced. In addition, experimental research may be conducted to test the learning process through the integration of DS. This will help obtain more comprehensive research results.

Conflict of Interest

The authors declare no conflict of interest.

Author Contributions

Piarnpilas Piriyaphokanont did the research design, conducted the experiments, collected the information, analyzed the data, and wrote the research reports.

Salawat Sriswasdi studied the literature and designed the research.

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