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Original Article

A Study of Embodiment in Vocational Education and Training Virtual of the SHAD System with a Post-Phenomenological Approach

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Abstract

This study aimed to investigate the embodiment in the virtual technical and vocational education of the SHAD system using the post-phenomenological method. The lived experience of several students of the art schools in Malard County was examined using interviews. The result is that the mediation of the SHAD System has expanded the temporal and spatial possibilities and the degree of freedom of action of the students; moreover, in this system, due to the substantive, implicit, and environmental differences of the practical training of specialized courses, additional challenges have arisen depending on the theoretical courses. Here, due to the change in the type of physical connection and the physical absence of the student, the learning conditions were different and were not as available as in face-to-face education. The set of senses could not be reproduced and simulated to the same extent in the SHAD Space. The quality and speed of coordination of different senses and the connection of the mind, emotions, and hands were different, and learning required more repetition and practice. Considering physical movement, angle of view, and work steps, achieving a new physical balance in the SHAD System was time-consuming and experimental. The degree of freedom of the student's body has led to improved performance in some situations and has disrupted learning in others. In this space, the body in action has created a kind of physical expertise that combines face-to-face learning and virtual. Physical presence and close physical contact between the students and the student, as in workshop training, are not provided and have led to changes. The emotions arising from the students' embodiment have played a role in achieving the goals of the SHAD system. In this system, the pace of education, learning style, student-centeredness, self-regulation, and communication outside of school have been strengthened. Finally, improving and redesigning the SHAD system in this area with a post-phenomenological approach has been proposed to facilitate learning in this system.

Keywords

Embodiment, Management System Learning, Post-Phenomenology, Vocational Education and Training virtual.

Introduction

Technology has always created changes in various individual, social, and educational dimensions of human life. Human experience, when using technology, is different from when doing something without it. Our life in the world is technological and technological life is a type of being in the world (Ihde, 1979, 65). The type of attitude towards information technology and the

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goals and methods of its application in education is possible in the light of philosophical questions and changes with the change in the type of philosophical attitude towards it (Zarghami-Hamrah et al, 2006, 10). Therefore, one of the educational methods that has been mentioned in the last few years, along with the expansion of information and communication technology in formal and informal education, and an attempt has been made to replace traditional education with it, is virtual education. It seems that despite all the advantages that virtual education has, the results of some research and studies show that this type of education also has its own limitations and suffers from problems in virtual technical and vocational education (Hyland, 2019; Srivishagan et al, 2021; Wati et al, 2022; Ghasem-Tabar and Ghasem-Tabar, 2022, Mesuwini & Mokoena, 2024; Plessis et al, 2024). All this can be attributed to the different characteristics of these educations that have been extensively studied and criticized in the philosophical literature and in the works of educational philosophers and researchers. In fact, virtual education in practical learning of technical and vocational education through learning management systems (LMS) is a new study that can be developed. Learning management systems lead to a set of processes that enable educational administrators to design and implement virtual educational units tailored to their needs (Lasmanawati, 2021). Currently, many existing standards or models for designing learning systems focus on the cognitive domain, which is not suitable for technical and vocational education (Nor Azlan BIN et al, 2019). Among these systems, the Student Educational Network (SHAD) has been formally used the most in the personal experience of the researcher and many teachers and art students. This virtual educational network has undergone changes in various writings since day one, has been evolving, and has created different features. It seems that the mediation of this system in the students' encounter with the virtual space has created transformed physical experiences and has had consequences that have meant changing dimensions of natural reality. Therefore, the present study has attempted to respond to some of the challenges in virtual technical and vocational education from the perspective of the philosophy of technology and describe and examine the changes in the embodiment relationship and its role in student learning on the platform of the SHAD system with a post-phenomenological approach to pave the way for a new understanding.

Theoretical foundations of the research

The history of philosophy has always been full of references in which the body is considered a secondary and negative thing about the mind or soul, and is considered lowly, primitive, and has the least role in perception and cognition in philosophical systems. In this regard, traces of a different confrontation with the body can be found in philosophers such as Nietzsche and Schopenhauer, Husserl, Heidegger, and Merleau-Ponty (Rezwanifar, 2015, 16). Hegel clearly considered the task of philosophy to be the elimination of the dualism between subject and object (Rafighi, 2018, 12). Criticizing the Western philosophical tradition of pure rationalism and denial of physical senses, Nietzsche emphasized the physical aspects of cognition and perception. He praised the pre-Platonic Greek tradition, which placed a very high value on the human body, and ridiculed the Platonic tradition that demeaned the body; "Moreover, the wise, awake man says: I am entirely the body and nothing else, and soul is only a word for something in the body... The body is a great intellect. Brother, your little intellect, which you call your soul, is also a tool of your body. A small tool and toy for your great intellect" (Nietzsche, 2001, 45-47). Furthermore, by distinguishing between the physical body and the lived body, Husserl has made it possible for the body to be considered as something much beyond a physical and natural phenomenon (Sayad & Gil-Amirroud, 2015, 4). In examining appearances, Husserl, using methodology, has completely bracketed the world and emphasized consciousness (Zarghami-Hamrah, 2006, 53-52). In this way, Heidegger criticized Descartes, who saw the world in a spatial context and as something vast and based it on the confrontation of thought, as a result of which Descartes saw it as a quantitative and measurable physical world. Such a world has no similarity or affinity with

Heidegger's human world because Heidegger's world was indeed the world of life, which itself was an aspect of Dasein (Mehdizadeh-Bidgoli et al, 2014, 3). For Merleau-Ponty, as the most prominent theorist in this field, perception was a bodily phenomenon, not a mental one; his perspective intuitively describes our everyday understanding as such that in everyday life we do not see ourselves as intellects separate from the body or physical mechanisms, but rather as embodied and living subjects. In general, in his philosophy, the human body was the center of the empirical world. He focused on the image of the body, our experience of our own body and its importance in our activities, and expanded the concept of the living body versus the material body from Husserl's perspective (Smith, 2013, 51); therefore, it can be said that the subject of education has been a human being with an embodiment; a human being who, considering his difficulties in the technological space and new ideas about his body, has needed continuous in-depth reflection and exploration. A body that has been forgotten and by considering it, different and effective approaches can be achieved in education. A body that needs to be seen and heard again by thinkers and practitioners of education and to consider the attitude of attachment in their effective decision-making. The concept of embodiment has been expanded in philosophical studies of technological relations of Ihde, and paying attention to it in virtual technical and vocational education has been a new perspective on research in this field.

Practical Background of the Research

In this regard, Kossova-Silina (2024) examined the problems of incorporating digital technologies in technical and vocational education institutions in an analytical manner and considered it a kind of paradigm shift in teaching and learning approaches, which has the potential to transform vocational education and an opportunity for educational service customers to succeed in the global economy and ensure the personalization of the educational process and overcome the gap between the academic environment and production. Wen et al. (2024) In a study aimed at investigating the integration of skill development in vocational education and online platforms in the transition to the modern era, have taken the view that the rapid expansion of online learning has led to a critical examination of an urgent issue in the educational realm, namely how online education is interconnected with the development of craft skills, and they have presented a new learning analysis model for this challenge. Mutebi et al. (2023) have examined the challenges of online education as a method for representing and evaluating practical skills training in technical and vocational education using a survey method. Willatt & Flores (2022) have taken a phenomenological approach to the view that in the context of pervasive digitalization, the physical presence of subjects and the body remains something primary and irreplaceable in traditional educational processes. Daryanto et al. (2022) have followed up on the role of e-learning in practical learning performance in a quantitative study using a meta-analytic approach. From the perspective of Du Toit (2021) using a phenomenological method; the virtual is fundamentally confronted with the reality of the person's embodiment, and this body-subject feature must be taken into account in order to provide a clearer description of virtual technology. Majumdar & Araiztegui (2020) in a meta-analytic study and Belaya (2018) in a review study have addressed the challenges of virtual technical and vocational education and have recommended further research into other trends in practical and technical education. Ghasem-Tabar and Ghasem-Tabar (2022) have used phenomenology to examine the advantages and disadvantages of virtual education from the perspective of technical and vocational education instructors. According to Mozafaripour & Shafiei (2023), using a post-phenomenological approach, despite some advantages, virtual education in the SHAD Learning Management System has led to the creation of specific experiences and behaviors, different from face-to-face education.

Research Methodology

In this study, the post-phenomenological method has been used to achieve the research objectives.

Post-phenomenology is a hybrid phenomenology that has aspects of pragmatism and has turned to "Techno-science" phenomena (Ihde, 2009,45). Applying this approach has helped us to gain subtle insights into educational technologies (Aagaard, 2017). Post-phenomenology in the perceptual branch means the emergence of the world for humans, with perception being the focus of its attention (Ahmadi-Hedayat et al, 2023). In fact, every technology offers us things and may also take things from us. The primary structure of this transformation or change is what Aide called Amplification/Reduction (Ihde, 1979). Therefore, the purpose of this study was to emerge a descriptive topic about the student's experience and to develop an interpretive theory. For this purpose, in the first step and in response to the research problem, the researcher's perceptual context has been considered; because the research topic has personal and professional importance for him and he has been involved with it intellectually and emotionally in his lived experience and has been able to contribute to it. In the second step, to examine the students' perceptions of the SHAD system, a field study was conducted using face-to-face interviews to obtain a comprehensive description of the dimensions of their experience of the SHAD system. In the third step, considering the results obtained in the previous steps, a discussion and investigation were conducted to provide the dimensions of the mediation of this system and to estimate educational achievements. An attempt was made to create anecdotal reports of the experiences to be used to reveal the fundamental patterns and structures of meaning. The key informants of this study were the students of the girls' and boys' conservatories in Malard County in the academic year 1402-1403. Here, the purposive sampling method of desirable sampling was used with certain criteria. The statistical sample of the study consisted of 17 people, and after conducting interviews, more desirable samples including 12 people (6 Girls and 6 Boys) from the second secondary school were selected purposefully. Table 1 summarizes the demographic characteristics of the study group.

Table 1. Demographic information of research interviewees

Code	Gender		Age	Grade	Field	Orientation		
	Girl	Boy				Industry	Services	Art
1	*		17	12	Accounting		*	
2	*		18	12	Interior Architecture	*		
3	*		15	10	Sewing Design			*
4	*		16	11	Computer Network	*		
5		*	18	11	Elevator Installation and Service	*		
7		*	17	11	Drawing	*		
9	*		17	12	Fabrication (Painting)			*
10	*		18	12	Packaging Design			*
13		*	15	10	Metal Industry	*		
14		*	16	10	Automotive Mechanics	*		
16		*	18	11	Wood Industry	*		
17		*	16	10	Electrotechnics	*		

In response to the research question, the survey interview method or fieldwork method was used in compliance with ethical principles until the researcher achieved theoretical sufficiency and saturation. Focusing on the level of tangible experience, the interview was designed in a semi-structured and in-depth face-to-face manner using open and semi-structured questions. The interviewees had the freedom to respond to the questions, and the researcher's only task was to monitor the response process so that they did not deviate from the main research path. The collected data were analyzed through categorization or classification using MAXQDA software

and displayed in a conceptual network diagram. To analyze the research data, the interpretive analysis method and Colaizzi's seven-stage model (1978) were used to obtain a clear description of the participants' lived experiences and perceptions of the phenomenon in question. The steps of this model include taking notes and converting conversations into texts, reading the conversation text several times and discovering and marking important phrases related to the phenomenon under study, conceptualizing the extracted important sentences, sorting the participants' descriptions and common concepts into specific categories, converting all derived opinions into comprehensive and complete descriptions, converting complete descriptions of the phenomenon into a brief and concise description, and finally, final validation. Regarding the validity of the results, the entire process was carried out under the supervision of a subject matter expert. For transferability, an effort was made to provide detailed and documented descriptions of the steps. The details of the data collection and analysis process, the maintenance of documentation, the researcher's commitment and experience, and the effort to obtain the opinions of others were among the factors that guaranteed the verifiability of this research. To achieve reliability, an effort was made to provide the necessary documents related to the phenomenon under study and to describe the procedures, context, and conditions of the research in a detailed and precise manner. To increase generalizability, an in-depth description of the context that shaped the research is provided. It should be noted that there have been criticisms of these methods in defining concepts because in qualitative research the meaning of a text resides in the minds of the author and its readers; therefore, the meaning of a particular document can change from reader to reader and from time to time.

Research Findings

The hypothesis that the body plays a significant role in learning has opened up a world of opportunities in education and (the use of) technology (Wippoo, 2014). It is through human experiences that learning is shaped and these experiences are embodied most of all through the body. The student encounters the world through his or her body and, in a long and pervasive process of embodiment, has solidified his or her existential relationship with the world, both through the perception of the world through the SHAD system and through the reflective transformation of perceptual and physical consciousness. In other words, the student’s earliest relationship with the SHAD system is embodied and formed when the SHAD system becomes an extension of the student’s physical self and is integrated as part of his or her bodily experience. Where the SHAD system is, as it were, dissolved in use and the student physically embodies it as part of himself or herself and confronts the world. This embodiment of the student, schematically with the SHAD system, was as follows:

(student - SHAD system) → world.

The placement of the student and the SHAD system inside the parenthesis meant that the student and the SHAD system were experiencing the world in the same form and body, and the SHAD system itself was neglected and not felt due to what Ihde calls transparency. Here, the SHAD system and the student have established a relationship with the world together and have done something together; while the space of the SHAD system is hidden from the student's awareness and the student has not felt its presence. This is similar to how when a keyboard is used to type a message, the student's immediate attention is not on the fingers or the keyboard itself, but on the message that is being typed. In this system, the student's hands and fingers are on the body and screen of the phone and there is a speaker (hands-free) that plays the sound, and the student has established an embodiment relationship with the system. After some time, the experienced student in working with the system, by skillfully manipulating the hardware and software buttons, has moved and acted integrated within the framework of the system's software environment through the eyes. When the student has used the technologies available in the SHAD system, his or her embodiment relationship with the real lesson and art student's classroom and

workshop has changed. "The body not only affects perception, emotion, and action but also affects higher-order mental processes. Here, the role of the physical body, the role of bodily activities, and the role of body awareness must be distinguished" (Vignemont, 2014, 79). The body in online spaces has required finding which signs of embodiment have been weakened and which new signs compensate for the loss of previous signs (Bailey, 2016). As shown in Table 2 of the analysis of the results in the relationship between students' embodiment, this relationship has been examined in six categories.

Table 2. Analysis of research findings regarding students' embodiment fitness on the SHAD system

Theme	Number	Category	Concept	Frequency
Embodiment Relationship	1	change in exposure and balance of senses	order of senses, quality of senses, connection of senses	10
	2	the role of the student's physical position and posture	Face to face, side to side, body movement, angle of view, work steps	12
	3	the performance of the student's body's degrees of freedom	comfort, discomfort, ease, flexibility	9
	4	the role of the student's bodily know-how	body in action, combined bodily know-how, virtual bodily know-how	6
	5	changes in the student's role	change of pace of education, self-learning, connection outside of school	25
	6	The student's emotional changes	Fear, anger, joy and surprise, disappointment, confusion	12

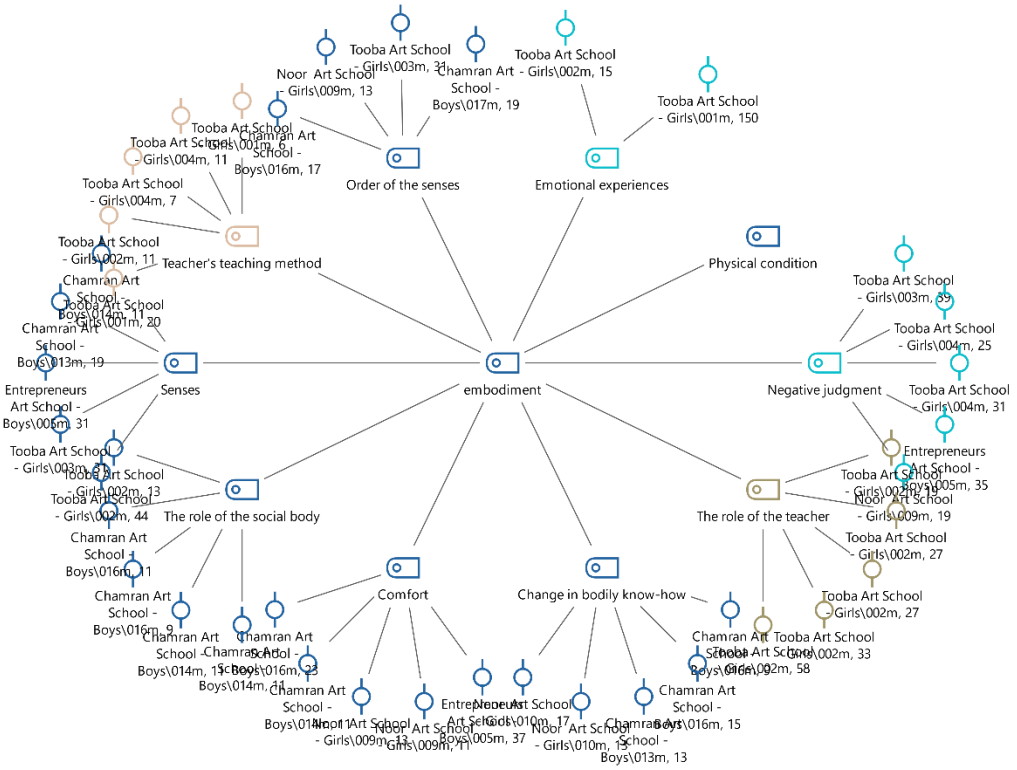

Figure 1. Conceptual network of the relationship of embodiment in interviews with conservatory students

Changing the Exposure and Balancing of the Student's Senses in the SHAD System

The student, as a human being, has used his eyes to see the world, his ears to listen, his mouth to experience various tastes, and his hands to grasp, touch, and feel objects or other people, and the like. Therefore, "it is through our bodies that we experience the world. This in turn is a prerequisite for learning that we are in a living relationship with things like the school building or the classroom" (Alerby, 2014, 12). The student has more or less incorporated the SHAD System into his external, physical, and sensory experience. The SHAD System has acted as an environment or atmosphere through which the student has been able to enhance his perceptual senses and expand his body's capabilities, and in a non-present relationship, engage his senses and perception in the continuous process of learning the conservatory's lessons. In the bodily relationship he has with the SHAD System, the student has expanded his senses from the place where he is located to another place. It is as if his hand has gone beyond the place and his eyes and ears have become cameras and remote hearing. His senses have expanded in the space of the SHAD system and in a way, expanded virtual senses have been formed; but have other senses also been sensed from a distance? For example, has the sense of touch been modified to the distance of touch or allowed to be touched? In fact, a change in one sense has been able to bring about new changes. According to most students in the SHAD system, the arrangement, proportion, and type of coordination of the senses as a means of communication with the body have changed compared to virtual education, and a new balance has been created. For example, student number 1: "In the workshop, the sense of touch is too much, (in the SHAD) working with the sense of touch becomes much less." The student has referred to the change in the quality of the sense of touch. Student number 2: "In the presence; first hearing and vision, then in the specialized lessons it is more touch. In the SHAD, my three senses (hearing, vision, and touch) were moving forward together (they were more in harmony)." Student number 9: "In the SHAD, first there is vision and hearing. There is no touch and you cannot touch the wood and tools. In the workshop, first, there is touch. You touch the wood and tools. Then there is vision and hearing." And similar cases.

It seems that in virtual technical training, there has been a gap between the senses in the real and virtual world in terms of the type and time of coordination. In this system, visual and auditory possibilities are used more, while in some technical fields such as the industry sub-branch, the use of the sense of touch has been very important for achieving learning goals. Here, learning has encountered setbacks and interruptions, and more repetition and practice have been required to achieve goals. The film and sound that the student has seen and heard from the teacher's teaching in the SHAD system or on the phone screen have been different from seeing and hearing directly in the classroom, workshop, and classmates. In the space of the SHAD system, instead of watching living objects and breathing bodies, the student is placed on a screen that is different from the presence of the class. In this process, the bodies of the students present in the class have been marginalized, out of reach of the peripheral vision of the SHAD system. The type of embodiment has changed. Instead of the bodies of the people in the class, the student has watched the image, sound, or writing on the screen. The student no longer sees living bodies in front of him, but rather a representation of the work of others and the content that is being sent. In this system, individuals are defined by everything they have done and are identifiable not by their usual characteristics but by the amount of work they have done in the SHAD system and on their screen. The status of the individuals present in the class is measured in terms of productivity, which is determined by the content and signs sent, and sometimes only by the sign of online presence. With a purely behavioral footprint, the students have become distant bodies sitting on the sidelines, and important aspects of their physical experience have been lost. The SHAD system has hidden the reality of the individual's current situation and their workspace and workshop and has shown little information. Students are deprived of the opportunity to be fully aware of their own and others' physical existence. In this way, the SHAD system has disrupted the physical presence of the students and marginalized them; Unlike communication in a real

classroom, all senses are not present in this virtual communication between student and art student.

The role of the student's situation and body position

Our experience of place is rooted in ourselves (Merleau-Ponty, 2002). This means that "here is the 'place' where I am and other objects are shadowed by their relationship to this 'place'. Some things are near me and some are far from me. 'Place' is the medium in which we live; because we are embodied subjects. We always have a subjective perspective on the world" (Matthews, 2008, 146). For example, the student tells himself that the entrance door to the workshop is on my right. The ceiling is above and the floor is below. On this basis, he has in fact reported the position of objects according to his position in the room; therefore, place is a dimension of the embodied subject and the embodied subject is the situated subject. Although the SHAD system has reduced communication costs and eliminated geographical restrictions, the student, as an embodied subject living in a virtual space, has still been involved in the location of his body; because the subject is embodied and his body must be located somewhere. "In fact, the subject's current perspective and perspective on the world is determined by the current position of his body at this moment. For example, in the case of a table, the embodied subject sees the volume of the desk according to his angle concerning it" (Matthews, 2008, 70) and if he changes his angle concerning the desk, what he sees of the volume of the desk is different from his previous state of observation. As can be seen from some of the students' statements, it can be said that in practical terms, as the student's location changes from the workshop to home and from face-to-face to virtual, the physical position during learning has changed. For example, student number 2: "(In SHAD) when the video was playing, we would put the drawing board in front of us. I would put my phone next to me on the right; for example, when I was watching a scene in the movie, I would come and draw on the drawing board." Student number 3: "In face-to-face, the table you are using is suitable and I have a more comfortable physical position. In reality, we are looking at this teaching from every stitch, that is, we see it beautifully; for example, I notice that the rat's tooth stitch has a twist and, for example, from which direction the twist came, the rat's tooth. In the video, the dimensions are not very clear. That's why I don't easily understand whether to bring this twist from above or from below. In SHAD, I try to make a stand for my phone. I put my phone in front of me so that I don't have to move my body too much while I'm doing it. I try to keep my phone steady with tools," and similar things that refer to adjusting the body's position with tools and equipment and at the same time with the SHAD system. In this environment, understanding multi-faceted perspectives, touch and presence of objects, some work steps, and similar practical things have not been easily measured. The student has not understood exactly what the cutting angle should be, how two pieces should be connected, or the appropriate tool has not been provided. In fact, physical balance and practical learning have changed. Balance is an activity that we learn not with a set of rules with concepts but with our bodies. Balance is something we do (Johnson, 2016, 7-8). According to the students' statements, reaching a new balance is time-consuming and experimental, and it has become different and sometimes very difficult depending on the disciplines, individuals, and situations.

The Function of the Degree of Freedom of the Student's Body

In technical and vocational education, the student as an actor has been the center of education. As an embodiment subject, he has to pay a price for being SHAD in the system and, since he is involved in the world, he could not have continuous freedom. The student's body, which has the means to gain experience and perception of the world, has limitations. It has limited means at its disposal (Merleau-Ponty, 2002). Due to the limited structure of the body, the more the body is stretched, the more the sense of grasping that is essential for meaning-making is lost. In fact, tools

designed to enhance certain physical skills often also make the part of the body they enhance involuntary and automatic. As Kierkegaard reminded us, what is gained in breadth is lost in intensity (Bailey, 2016). However, the degree of freedom has been expressed as the binding nature of the action regarding the purpose of the action, the methods, and the instructions for its implementation. High degrees of freedom indicate goals that arise from individual decisions (Bünning, 2007). In this system, the teacher has withdrawn from his dominant role and has been more of an initiator of learning actions. Here, the accepted and independent goals have been different. It seems that in the students' speech, the high degree of freedom in SHAD is mostly expressed with the phrase "I am comfortable" and the low degree of freedom with the phrase "I am uncomfortable". For example, student number 9: "In the school workshop, for example, sometimes I don't feel like painting, I feel like if I sit down now, I will ruin it. However, in my workshop environment, I am responsible for doing the work and handing it over to the teacher. I work better at home. I am comfortable in the room. I arrange my things. I put on my music. I start working"; That the student's freedom of action has led to enhanced learning through practice. Student No. 3: "In terms of physical position, one is more comfortable at home."Student No. 1: "Home is more comfortable. The school has a framework. Without wearing a school uniform, I am studying and while, for example, the teacher is teaching, I can do other things." And similar cases. In these trainings, goals that have arisen from individual decisions have strengthened the degree of freedom. In general, the student's body position has experienced greater comfort and flexibility when working with the SHAD system, due to the distance from the formal and traditional defined frameworks in the conservatory. This change has led to improved performance in some situations and has disrupted learning in other cases.

The role of the student's bodily know-how

Since learning in technical and vocational education is different from conventional learning in learning management systems, the conditions for performing the performance have changed here; because it includes psychomotor aspects and this classification model has been related to the mastery of physical skills from reflexive movement to showing appropriate body language (Nor Azlan BIN et al, 2019). In the SHAD atmosphere, learning has been more mental and less physical. In the body that we experience, the body is in action (Merleau-Ponty, 2002). The objective body consists of muscles, bones, and nerves and is distinguished from the lived body, that is, the body that we experience in pre-reflective consciousness. The lived body is understood in the context of its practical encounter and engagement with the world. The action does not have to be performed, but can remain in the form of potential movements, what is called physical competence (Siewert, 2005); That is, "practical knowledge about how to act with or directed at a part of one's body" (Winimon, 2013, 39). In the SHAD virtual space, a kind of virtual bodily know-how has emerged; instead of involving the sense of touch more than other senses, it has focused on the sense of sight and hearing. Considering the statements of some students, the type of bodily know-how of students has changed under the influence of the mediation of the SHAD system. In-person bodily know-how has weakened and a kind of bodily know-how that combines in-person and virtual simultaneously has emerged. For example, student number 2: "When we went home with SHAD, I would draw a scene in a movie I was watching, and I would come and draw it on the drawing board. Because I was used to it, I would go piece by piece." Student number 3: "I have to do my work on a table that I have to do for, for example, a living room, but for example, in person, the table you are making is suitable and I have a more comfortable body position. I am not professional enough to understand how to sew a zipper by just looking at the video, and this makes it difficult to sew somewhere, to sew it wrong." Student number 10: "It was a very difficult box. No matter what I did, it wouldn't work. It was very complicated. I even tore up ten pieces of cardboard, it was very difficult. In the end, I came and took the in-person class." Student number 13: "Now that we are in the workshop, we work with hand and power tools; for

example, we are in the workshop. They give us a size. We cut that piece according to that size with a Craft Knife (a type of work tool); for example, MDF board (a type of industrial wood). We also observe all safety precautions. You can't do it in the next steps. "You can't do it at home" and similar cases; Therefore, the body of the students, considering their previous and bodily know-how in the face-to-face space, is now facing challenges in the virtual space of its former expertise and has been trying to achieve a new kind of cognitive balance. A new definition of expertise resulting from physical literacy and, as a result, the embodiment presence of the student in the virtual space of the SHAD system has been necessary to adjust and manage physical techniques with new conditions. Body techniques are organized movements that are performed to achieve practical or symbolic efficiency. These techniques include practical rules, frequency of movements and gestures, synchronicities, and adjustments of muscle rhythms that are performed with a specific ultimate goal (Amiri, 2018). The review of the new type of bodily know-how, which is a combination of in-person and virtual apprenticeship, has been accompanied by various experiences and challenges in various technical and professional fields.

Changes in the Role of the Technical Teacher in the SHAD System

In this system, the student has found the power to communicate with a teacher who is placed and physically different. The student, in a place far from the teacher, through the SHAD system, has simultaneously seen the work sample, the way of working, the stages of design and construction, the hands, face, and body of the teacher, and heard his voice. This way of seeing and understanding the art student's training may not have been possible for everyone in the classroom and workshop from the same perspective, standardized and fair. The student and the teacher have worked towards the same goal, but they have done this differently. They have been together in a virtual space and very far from each other. In the workshop, it is common for art students to work at their desks while the students are working, but when this has become a permanent state through the SHAD system, the conditions have changed. A student who encountered a problem in the workshop and in-person space and while learning, established and had a more qualitative connection to solve his problem. He felt a kind of strength, peace, and deepening in learning due to the physical presence of the teacher. For example, when the student had a question the teacher might be answering another student. At the same time, the student realized this scene and waited while still engaged in his activity. "Waiting for the end of the work is not just a matter of time, it is part of the action" (Boger, 2018, 136). Here, there was a final estimate for the wait. While waiting in the SHAD system has sometimes become very tiring because there has been no bodily awareness. In the exercises, the teacher held the student's hand and corrected his mistake step by step, and the student achieved a precise understanding of the ins and outs of the workshop projects alongside a team of his classmates. In the SHAD space, this possibility and method of presence have changed. In this context, embodiment education, like in-person education, is not available. "The teaching hand no longer places its reassuring presence on the student's shoulder, or points meaningfully in response to the student's question. Instead, the cyborg hand in the grip of the panopticon software manages the classroom through technology. While silently freeing the teacher from the educational relationships that once defined his daily teaching practices" (Adams and Thompson, 2011, 269). The need for traditional skills and techniques such as proximity, nonverbal cues, and physical and instrumental guidance in the workshop seems to have faded. For example, when teaching in the field of fashion design, various types of fabric cutting and sewing are taught, the perspective and possible errors that are possible with the physical presence and close physical interaction and contact between students and teacher are not presented with the same quality. In the field of drawing, the transfer of introductory concepts, and the teaching of three-dimensional views and complex drawings have encountered difficulties. For decades, students have subtly felt the presence of their teacher through proximity, voice, language, gestures, and the reassuring hand on their shoulders; but the SHAD system has changed all this and the classroom has inevitably become a different place. In the process of the emergence of

new teaching routines and methods, the presence of the teacher has taken on a completely new meaning and the nature of classroom management has completely changed; it seems that a new kind of relationship with balance and equilibrium has been created. The usual everyday interactions of the student have been replaced by visual communication and more superficial forms of one-way communication, opportunities to build trust have been lost, and the development of healthy educational relationships has been jeopardized. The presence of the student and teacher in the SHAD system space has been able to create a different meaning for learning. For example, regarding the use of ready-made teaching, it can be said that just as the corrective responses of teachers have become automated and interactions with stereotyped responses in the class group have decreased, the structure from which the educational relationship is formed has also changed. The statements of the learners testify to these concepts that opportunities for interaction with students have been eliminated, making real communication and conversation challenging and sometimes untenable. In this system, the change in the pace of teacher training has changed the quality of education. In some cases, the student's contact with the teacher outside the school has facilitated the completion of the technical education process, especially in evaluation. Therefore, here the learning strategy has changed and the student-centeredness and online self-regulation have been strengthened.

Emotional changes of the student in the SHAD system

The lack of appropriate social participation of the student with the teacher and his classmates has created different emotional and sensory experiences in the SHAD virtual classroom environment. It has been well clarified with more negative and less positive statements of some students, that a student who lives in a kind of relative balance and harmony in the environment and atmosphere of the workshop training with the bodily perception of others; by being present in the SHAD system space, his emotions have become turbulent. For example, the student was unable to convey disappointment, confusion, enthusiasm, disinterest, understanding, or agreement by looking at the screen of the mobile phone and the software window of the SHAD system. The lack of physical presence has created an incomplete or incomplete "I" in virtual communication. In physical encounters with others, we gain much more than words and communicate with others with the type of voice, facial expressions, body movements, etc. (Anderson and Krathwohl, 2000). Unlike communication in the SHAD system, where most of the messages are beyond the student's control, in communication with the real world, the student was able to understand others and empathize with them. He personally experienced different emotions of others such as fear, anger, joy, surprise, and similar things. In the SHAD system, the student was not seen well by the student and others, and his emotions were not aroused like in the workshop space. Here, the virtual communication between the student and the teacher was not complete and comprehensive. In the normal mode, communication includes body movements, gestures, looks, and similar things. Hatred, hatred, love, admiration, and other states of the learner and the teacher are transmitted with the gaze and body postures, and with the gaze and gestures, the learner and the teacher can read the mind and feelings of the other party (Graham, 2003). These things did not exist in virtual communication. "In virtual communication, there is no other gaze, and when the person is not seen, it is as if the "other" does not exist in reality at all. "Real confrontation becomes possible when the other reveals his/her face" (Rosato, 2010, 311). Also, the emotions of the students in the SHAD system are accompanied by physical pain such as neck pain, eye pain, and physical fatigue, and their physical strength has faced challenges in the virtual education of the SHAD system. Of course, in some cases, some students have also stated signs of mental security due to the increased degree of freedom and flexibility in time and space. In general, for the students, the accumulated emotions resulting from the environmental space of the art school workshop have created similar expectations in the virtual space of the SHAD system. Paying attention to the students' emotions as part of the appropriate design of the SHAD system for in-person and virtual technical training has been necessary. The abundance of negative emotions of the students indicates the lack of

attention of the SHAD system to understanding their needs, and the increase in positive emotions has led to success in achieving the goals of these trainings.

Conclusions and Suggestions

Finally, referring to the background of the related research mentioned, in comparison with the subject of this research, it can be said that the issues of virtual technical and vocational education in different educational environments and different dimensions have been studied in different ways over time; but less attention has been paid to the issue of an embodiment with the post-phenomenological method and similar research has not been achieved in practical training of the native SHAD system. The result is that learning in technical and vocational education has complexities that have gained broader dimensions and brought difficulties with entering the SHAD system space. Our understanding of how students learn in learning management systems is still limited and each of the systems has its own characteristics and bottlenecks. From a philosophical and post-phenomenological perspective, the SHAD system in virtual technical and vocational education has emerged as a type of transformational mediation and has changed the student experience especially. Here, the embodiment relationship between the student and the SHAD system has been visible in technical and vocational training; embodiment experiences have been able to lead to more efficient learning. The learning conditions have been different due to the change in the type of physical communication and physical absence and have not been provided as in-person training. The set of senses has not been able to be reproduced and simulated to the same extent in the SHAD space, and the retrieval of non-verbal signs has become difficult. The quality and speed of coordination of different senses and the connection of the mind, emotions, and hands have been different, and learning has required more repetition and practice. Considering the body movement, perspective, and work steps, achieving a new physical balance in the SHAD system has been time-consuming and experimental and has sometimes become different and difficult. The degree of freedom of the student's body has led to improved performance in some situations and has disrupted learning in other cases. In this space, the body in action has created a kind of bodily know-how that combines in-person and virtual. Physical presence and close physical contact and interaction between students and teachers have not been possible and have led to changes in the speed of education, learning methods, student-centeredness, self-regulation, and communication outside of school. The feelings arising from the embodiment of students have had an impact on the achievement of the goals of the SHAD system. As students, they have been able to regulate their embodiment relationship with the system. It has been necessary that the set of effects and possibilities of strengthening and reducing relationships to deepen learning for students has been taught, and that various types of complementary support for non-face-to-face learning should be considered alongside flexible and blended learning. To deepen the understanding and application of the research, the following have been suggested:

- Conducting post-phenomenological research in other technological relationships (Hermeneutics, Alterity, Background, etc.) to examine the capacities and threats of this technology for technical and vocational virtual education.
- A more precise post-phenomenological understanding of learning management systems with a focus on the SHAD system, to create a model for designing a platform appropriate for technical and vocational virtual training
- Holding training courses for users and designers of the SHAD system, to understand the philosophical and post-phenomenological dimensions of technical and vocational virtual training of learning management systems

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