SSRG International Journal of Economics and Management Studies
ISSN: 2393 – 9125 / https://doi.org/10.14445/23939125/IJEMS-V10I1P105

Volume 10 Issue 1, 34-41, January 2023

Original Article

Perceptions on the Role of Digital Technology in Acupuncture Education: A Qualitative Study

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Received: 03 December 2022 Revised: 06 January 2023 Accepted: 19 January 2023 Published: 30 January 2023

Abstract *- This study aims to determine the perception of both professors and students on digital technology's role in facilitating interactive acupuncture learning. Learning acupuncture is normally carried out face-to-face since many of its lessons demand immediate validation for accurate comprehension. However, the COVID-19 pandemic forces many learning institutions to conduct classes online. Hence, the necessity to examine the way digital technology is perceived in teaching and learning acupuncture. Moreover, this study is conducted in the Acupuncture department at the Universitas Katolik Darma Cendika (UKDC), Indonesia. For its distance learning, the university uses the commonly accessible Google Meet and Zoom application. This qualitative research employs the qualitative data collection approaches of one-to-one and focus group interviews. The gathered data are analyzed using systematic textual analysis. So far, there is not much research yet on the way professors and students perceive the usefulness of digital technology in acupuncture learning. In filling up this particular research gap lies the novelty of this study. The data analysis reveals three related themes, namely: 'unpreparedness to engage in digitalized acupuncture education among the internal stakeholders'; 'need for more updated digital learning applications and quality digital teaching approaches'; and 'the fitting attitude towards digital teaching and learning is Both and, not Either or'. Indeed, learning and teaching acupuncture may be done online. Nevertheless, direct hands-on training remains its main instruction medium due to its very nature.*

Keywords *- Acupuncture, Digitalization, Interactive learning, Perception, Qualitative study.*

1. Introduction

This study explores how both professors and students in relation to acupuncture teaching and learning processes perceive digital technologies. Digital technology has dramatically influenced how education is carried out today. [1] For instance, much digitalization progress happens in safeguarding the library data and the intellectual outputs of university professors and students. [2] Indeed, many universities nowadays invest in digital libraries to store countless computerized information databases and make them accessible to remote end-users via the internet. This is also true as regards the digitalization of academic information resources. [3] However, this makes one wonder how people perceive these developments in the teaching and learning fields. This paper focuses on three key concepts, which are perception, digitalization of education, and acupuncture.

Perception in this context refers to the personal conviction of the significance of digitalized education worldwide. [4] Since March 2020, the Jordanian Ministry of Education and the Ministry of Higher Education have imposed online learning on all educational institutions. [5] Focusing on a student-centred learning method in online education has been stressed through various directives (Khoury, O., 2022). Many viewed educational digitalization as the proven way to avail of quality education during these modern times. Undeniably, the digitalization of various aspects of life has been happening since the invention of computers and the strengthening of the internet connection. But it became more defined due to the life-changing effect of the COVID-19 pandemic. This is especially true in the medical field. One such development is the Go. Data is a custom-built software developed by WHO in collaboration with GOARN partners to support data collection during an outbreak response, including managing the case and contact data. [6] The Indonesian government exerted a similar effort through the PeduliLindungi application.

Similar initiatives are also being conducted in the teaching and research fields regarding professors acquiring new instruction skills. Traditional teaching approaches have only partial properties on the growth of employee skills in manufacturing settings. In the last decade, many learning factories have been constructed, covering an extensive range of learning situations, with digitalization becoming progressively essential. [7] This is the reason behind the proliferation of learning and research factories in the last ten

years. Indeed, the spread of distant forms of livelihood, education, and communication during the Covid-19 pandemic ushered in a new-normal way of doing education. [8]

However, the usefulness rate of digital technologies fluctuates from one study program to another. [9] For some disciplines, like Philosophy and language studies, which are more focused on conceptual learning, digital platforms and programs are plentiful and readily available. Various useful applications and tutorial video recordings make learning materials more accessible and the learning process much easier. But this is not quite the case with regard to medical-related courses. Such study courses normally demand that face-to-face lessons be conducted since the teaching and learning processes require more direct physical contact in real-time. However, due to the COVID-19 pandemic, many learning institutions were forced to provide academic input to their students via online classes. [10] This is true even for courses that are more hands-on by nature. One such course offering is acupuncture.

Acupuncture is a system of integrative medicine that involves pricking the skin or tissues with needles, which is meant to alleviate pain and cure illnesses. [11,12] Its benefits include treating various physical, [13,14] mental, [15,16] and emotional conditions. [17,18] Although this medical method originated in ancient China, acupuncture is now widely practiced worldwide. [19] Acupuncture points are believed to stimulate the central nervous system. [20] This, in turn, releases chemicals into the muscles, spinal cord, and brain, which may stimulate the body's natural healing abilities and promote physical and emotional well-being. [36]

Acupuncture practice nowadays comes in two forms, which are classical acupuncture and medical acupuncture. The former is more traditional in nature, while the latter is practiced according to a medical insight approach. [22] After considering acupuncture as an invasive medical service intervention, the Indonesian government issued a policy through PP 103 in 1994 declaring that acupuncture health services should no longer be performed by acupuncturists who only have graduated from short courses. Rather, it should only be performed by acupuncturists with higher education credentials. Based on this government regulation, the *Universitas Katolik Darma Cendika* (UKDC) took the lead in offering Acupuncture and Herbal Medicine study programs. This renders UKDC the first Private Education Institution in Surabaya to open a D4 Program in acupuncture.

Indeed, UKDC has boldly offered an acupuncture degree program in Surabaya. But is she ready for it? Is the university equipped to wade through the difficulty of teaching acupuncture online? How do the professors and students of acupuncture address the practical issue of teaching and learning acupuncture from home due to the repercussions of the COVID-19 pandemic? Definitely, ready or not, the university has to continue running the course offering. The professors and students are compelled to use digital technology well in learning lessons from home. This paper attempts to determine what digital educational technologies are considered to be effective in providing excellent acupuncture education. More exactly, this study focuses on the perceptions of acupuncture professors and students on the role of digital technology in attaining high academic performance and reliable expertise in the field.

The grand theory involved in this study is the Resource-Based View (RBV) side-by-side with the Knowledge-Based View (KBV). RBV argues that a firm's sustained competitive advantage (in this case, the university) is based on developing its valuable, rare, inimitable, and non-substitutable resources (Barney, 1991). The capability of institutions to acquire and develop these resources affects their overall performance and competitiveness. [23,24,25] The RBV of the institution starts from the concept that its performance depends on the proper honing of the strategic resources at its disposal. [26,27] The way these resources are used and configured enables institutions to perform well and have distinct leverage against their competitors. [28]

KBV signifies a convergence of research tracks regarding the part of knowledge within the institution that has tremendous significance to firm performance. [29] The KBV provides a motivation for the institution's existence that is distinct from the predictable transaction cost method. [30] The knowledge-based theory of the firm considers knowledge as the most strategically significant resource of an institution, especially in times when decisions in business ventures are mostly data-driven. [31] It is expressed and implemented by a subjective yet interactive process driven by men, based on their judgments and actions with the common good in mind, which finds more significance in a university setting. [32] The main knowledge used for the firm's development comes from the personal life of the actors involved in the project. [33]

2. Research Design and Method

This study is an explorative qualitative research design using focus group interviews conducted at the UKDC in Surabaya. Two focus group interviews were conducted with students and professors involved in a 22-credit module in basic acupuncture as part of the first-year bachelor program. A total of 8 participants were recruited for this study.

The program's first year involves a 22-credit theory module in basic acupuncture. Topics include TCM basic theory, basic diagnosis, acupuncture points and meridians, Qigong, Chinese herbs, anatomy, physiology, biochemistry, biophysics, pharmacology, immunology, Indonesian basic herbs, and public health are included in theory module. Teaching and learning activities include lectures, supervised

group work, and self-study. The university has been using a digital learning platform via Zoom application and Google Meet. As described in the introduction, the researcher intends to explore the perception of both professors and students on digitalized acupuncture education. Thus, the main research question of this mini-research is as follows: How do acupuncture professors and students at UKDC perceive the interactive role of digital educational technology in the teaching and learning processes of acupuncture as a medical science?

To answer this main query, the researcher pursued two explicit objectives. The first one is to identify the precise and particular educational digital technologies that are perceived to facilitate the teaching and learning process of acupuncture as a medical science. The other one is to know the reasons why and how such educational digital technologies greatly enhance the teaching and learning process of acupuncture. To attain such study purposes, the researcher asked the following series of questions from the respondents:

- Is learning acupuncture at your university technology-based? Please explain.
- What are applications used for online learning? Why?
- What technologies are used for online practicum? Why?
- What technologies are used for offline practicum? Why?
- In your opinion, what are the advantages of technology-based learning? Please explain.
- In your opinion, what digital technologies proved to be useful in teaching/learning acupuncture? Please explain.
- In your opinion, what are the weaknesses of technology-based learning? Please explain.

2.1. Design

This explorative qualitative research design using focus group interviews (FGI's) has been conducted to explore students' and teachers' perceptions of using digital technologies as part of the acupuncture educational program. FGI is considered a useful technique for exploring peoples' opinions, attitudes, and beliefs that arise in interaction with multiple participants. Hopefully, the resultant data of the group interview above shall provide answers to the above-set research goals and objectives.

As indicated in the research objectives, this mini-research has two major contributions to the research field. First, the outcome of this study is expected to fill the gap of knowing the perceptions of both professors and students of acupuncture at UKDC regarding the role of digital educational technologies in the teaching and learning process of acupuncture as a medical science. Second, this study's upshot would identify the available educational digital technologies that work well in facilitating the teaching and learning process of acupuncture as a medical science and know precisely why and how such educational digital technologies function as such.

2.2. Sample Participants

Purposive sampling was used to recruit students and professors for the diploma program in acupuncture at UKDC. The strategic approach was intended to produce many valuable empirical data from the participants with diverse roles in the learning process. A google form survey invitation was sent through WhatsApp to the target participants following the first year of the academic program. Other than that, a proper understanding of the exact nature of this study was given to them through the help of peer intermediaries in the context of informal group sessions and core meetings. Eventually, four students (all female) and four professors (3 female, 1 male) willingly responded to be part of the study. The participants were divided into two focus groups (FGs): FG1, four students, and FG2, four professors.

2.3. Data Collection

Google survey form has a way of facilitating the process of gathering the responses of the participants. Before answering the survey questions, the participants were asked to provide the following standard personal data: Name, Gender, Age, and Work or Position (professor or student).

The survey instrument can be divided into two sets of questions. The first set of four questions is focused on getting to know the readiness of UKDC as a university to conduct online learning and the preparedness of both professors and students in carrying out teaching and learning acupuncture based on the digital educational technologies available at hand. In this first set, the topics are focused on perceived digital readiness, such as the perception of the participants on whether the acupuncture program of their university is technology-based or not; the applications considered by the participants as truly useful in teaching and learning the theories and the proper practice of acupuncture.

The second set of questions focuses on technology-based education's strengths and weaknesses. The questions were expressed in Bahasa Indonesia, the participants' first language. Moreover, it took four days for all the survey data to be collected. Lastly, the researcher also conducted a personal interview with one of the students, which lasted for an hour. The data gathered from this interview was also used to validate further some of the survey data gathered through the google form.

2.4. Data Analysis

The data gathered through the google form comes raw. There is a need to be collated in an orderly fashion, then analyzed with the use of systematic text condensation, which "is a descriptive and explorative method for thematic cross-case analysis of different types of qualitative data, such as interview studies, observational studies, and analysis of written texts". [34] There are four steps in the entire procedure, namely: total impression, identifying and sorting meaning units, condensation, and synthesizing. More specifically, the process begins with

finding themes out of chaos, codes from themes, meaning from codes, and ending up with descriptions and concepts from condensation. [35] The experiential data gathered were ample to answer the set questions of the research study.

3. Findings

When analyzed, the data pointed to three distinct themes: 1.] Unpreparedness to engage in digitalized acupuncture education among the internal stakeholders, 2.] Need for more updated digital learning applications and quality digital teaching approaches, and 3.] The fitting attitude towards digital teaching and learning is *Both and* not *Either.*

3.1. Unpreparedness to Engage in Digitalized Acupuncture Education Among the Internal Stakeholders

The acupuncture diploma course offered at UKDC launched about three years ago, in 2019. Aside from being a new course offering, acupuncture academic learning started on a face-to-face method, then shifted to online mode due to the COVID-19 pandemic. One student mentioned, "*So far, we have only used online meeting platform applications such as zoom and google meet, and the Qigong lecturer's anatomy application, which belongs to the lecturer himself, not the school's".* Indeed, both students and professors have to be contented with the commonly available media platform provided by Zoom and Google Meet. The user interfaces may be readily available and good enough for communication and classwork presentations. Besides, other usual ways of sending documents like email, and the more recent ones, such as the WhatsApp application, also come in handy. But as regards in-depth and accurate mediums in teaching and learning acupuncture, even for its theoretical dimension, they are definitely far from being sufficient.

When asked to identify which media platform they more actively use as a communication channel in their online classes, both professors and students mentioned the Zoom digital learning platform. A student enumerated some more, "[The] campus facilities provide online lectures and overhead projectors in every classroom. The acupuncture laboratory has Laser puncture and Electro stimulator tools for practicum" (FG1). And as it is commonly used in Indonesia, WhatsApp application is the most preferred way of communication and lesson sharing on a person-to-person basis since it is more direct and easily accessible. Email may be good for sharing huge files, but student participants often miss important communications sent through email due to email junk and clutters. Students are oftentimes preoccupied due to the many communication and media channels they handle. They ended up not having much time to open their personal emails, how much more the official email address provided by the university.

Overall, there is a common perception among the participants that UKDC university was caught unprepared in the current highly digitalized education. FG1, comprised of students, is more vocal about this since they are the paying group. FG2, comprised of professors, could not say much in this regard since much of the things they say against the university administration can boomerang on them as professors. After all, their duty is to develop a more creative way of delivering their lessons in or out of season. One professor opined, "For the diagnostic course that I handle, it cannot be done online because it requires an evaluation using the five senses. If you go online, there is a concern that there are different perceptions. For example, the color differences on each computer can be different depending on the settings" (FG2). It was confirmed by one of the students who commented this way, "For practicums that require direct observation using the five senses, [this] cannot be done. [Moreover], if there is a disruption in the connection, learning is disrupted" (FG1).

As a coping measure to this impasse, the professors try to motivate the students to maximize their sense of creativity by coming up with more animated presentations instead of being caught up, close to being addicted to spending much time on their personal social media. Sharing of available learning materials online is also encouraged. Both students and professors are expected to channel their energies into creating video lessons and class notes.

To compensate for the lack of sophisticated learning facilities on campus, the students took the initiative of compiling lessons from the internet, the ones available from YouTube, for instance, as sources of sound digital learning materials that would enable them to participate keenly in class discussions, which was demanded from them by their professors. Active class participation is a must. The professors, on their part, strive hard likewise to be more effective in handling their classes. A student commented that other than simply using Zoom and Google Meet, one of the professors used the Qigong lecturer's anatomy application, which belongs to the lecturer himself. The student even suspected that no other acupuncture educational technology in Surabaya is similar to this.

But again, this points to the fact that UKDC, as a university, is not yet ready to fully engage in acupuncture education through digital educational technologies.

Need for more Updated Digital Learning Applications and Quality Digital Teaching Approaches

Teaching enthusiasm and innovativeness are definitely desirable qualities of a professor but updated, and user-friendly digital technology is likewise needed. Variation in teaching is truly important, but quality education needs more than variety in teaching styles. The students expect effectively motivating lectures. But what does it take for class sessions to be highly efficient and to stir? What does it imply? A good lecture implies that the professor gives his

total self in the teaching process. This can be seen in how he conducts himself and prepares for class.

One of the students stated that "in Qigong courses that are held online, lecturers several times use anatomy applications when sharing screens to explain the muscles used in certain moves. I find it quite impressive and interesting (FG1)." This perception does happen when professors really come ready for class. A good lecture takes place when a professor allows the students to actively participate in class by giving them enough input preparations. This is what happens when through sophisticated applications, the students are enabled to study in advance the lessons for the day. Here lies the strength of digital technology. All the class lessons can be made available for the students to study ahead of time in the comfort of their homes. This is commonly referred to as a flip learning strategy.

By using the latest and user-friendly digital learning technology, professors can easily create opportunities to enable students to engage actively in classroom activities. In this pedagogical approach, direct instructions are given in advance for students to work at home. They can work on their lessons individually or as a group. The essential thing is that they have already gone through the lessons before they come to class. In this way, they always come ready to participate actively during class discussions. If they are not ready with the answers to some pertinent questions in a given lesson, then at least they come ready with pertinent questions. To this effect, one of the students pointed out the ed-link for lecturers and students, which is normally used for attendance, class schedules, collection of assignments, and other notifications (like mid-term and final exam results, transcripts, tuition fee payments, academic points, etc.) can also be used for advance lessons, which is closed to a tutorial in nature. All these redound to the same things, the need for more updated digital learning applications and more engaging digital teaching approaches.

3.3. The Fitting Attitude Towards Digital Teaching and Learning is Both…and not Either…or

Both professors and students have declared that digital technology facilitates acupuncture teaching and learning. The digitalization of academic learning makes many lessons available and accessible anytime and anywhere. The majority of the professors maintained that digital educational technologies facilitated the entire teaching and learning process, enriched the database of resource materials, and smoothened communication between professors and students (FG2). Distance learning nowadays is made easy in a highly effective and efficient manner.

The digitalization of education, says one of the students, enables the students to follow distant learning, which saves her a lot of time commuting from home to the campus ", especially for those whose homes are far away" (FG1). The same student continues commenting that "for the teaching materials that are shared screens in our laptops at home, such as the Qigong lecturer's anatomy application, it is easier to see because it is clearer when compared to the image we see when are using the overhead projector in the university classroom" (FG1). Nevertheless, students and professors also found disturbing pertinent issues in using digital educational technologies. At times, the learning platform is cluttered and difficult to navigate due to internet signals and connection-related issues (FG1). Other concerns are in terms of boring presentations and difficulties in maintaining a reasonable level of lecture concentration and lesson retention.

As always, there are pros and cons to every phenomenon. When asked to choose between online and face-to-face learning, students and professors have something good and bad to say about either option. One student commented, "Usually online sessions are more boring unless the material is interesting because there is minimal interaction; students are easily distracted because online classes are usually in the bedroom. For courses such as Meridians and Acupuncture Points, there must be an offline class so that the lecturer can show how to find the points, the path of the meridians, etc. It won't be clear if it's only online. The Diagnosis course is also the same because it requires practice in feeling the pulse, looking at the tongue, etc., not just theory" (FG1).

The happy logical compromise is to adopt both approaches but make sure to highlight their positive dimension while setting aside their weak points. In short, the fitting attitude towards digital teaching and learning, especially in the field of acupuncture science, is not an Either…or but Both…and. Both face-to-face and digital technology-mediated teaching and learning are needed for a reliable and steady acupuncture education.

4. Discussion

The usage of digital educational technology at the university level is not as simple as it initially seems. The results of this mini-research exposed both the desirable and undesirable dimensions of digital technologies, especially when applied to a diploma program in acupuncture. Basically, it was positively affirmed that digital technology has tremendous positive usage in carrying out the acupuncture learning program during the COVID-19 pandemic time. The shift to online learning and the integration of highly digitalized learning platforms into the diploma program in acupuncture at UKDC may have been forced by circumstance. But somehow, the said changes are welcomed by the internal stakeholders, namely the administrators, professors, and students.

Facility-wise, the university was not fully ready. The online classes were made possible due to the readily

accessible learning platform like Zoom and Google Meet. These are not exclusive university digital facilities but public ones. The professors themselves are fully equipped to handle the sudden changes in handling acupuncture classes with ease. Only one of them showed preparedness in providing a relatively sophisticated and updated software referred to as 'Qigong lecturer's anatomy application.' The rest simply rely on what is generally available on YouTube and the internet. Some of the professors candidly admit the inability to properly conduct some classes online due to the nature of the lessons at hand that pertains to diagnostic skills. This can only be done when face-to-face with the subject to be physically examined.

So, the vacillation goes on and off. To some extent, online classes are found more convenient and even more effective. This is attributed to the extra time both professors and students gained due to the saved dressing up and traveling time from one's home to the campus. "From a student's point of view: [online class is advantageous in terms of] saving time and transportation to commute to campus, especially for those whose homes are far away. For teaching materials that are shared screens, such as the Qigong lecturer's anatomy application, it is easier to see because it is clear if you use an overhead projector, the picture is not very clear" (FG1). But in certain cases, focus and interaction are definitely more difficult to maintain at home than when classes are conducted in the classroom. In the words of one of the students, "For courses that have practical exercises, students have difficulty understanding the material. So it remains efficient offline and practicum in the lab" (FG1).

Which educational approach then is better? Online? Or face-to-face? The answer to these questions could be neither, could be both. This is because the way things would turn out for both professors and students would depend so much on how the lessons are handled and the way professors and students make good use of digital educational technologies. In flipped learning, for instance, the lesson materials are given much ahead of time for the students to learn things in advance, either individually or as a group. Guide questions and even ready answers are provided ahead of time, too. This is one way of maximizing the beneficial use of readily available digitalized resource materials. They can be and should be accessed and utilized anytime and anywhere.

However, this does mean that video lectures were an adequate replacement for face-to-face lectures. Digitalized materials can never substitute the active roles of professors in classroom settings, especially in acupuncture education. Overall, both professors and students perceived digital technology as an essential part of the teaching and learning processes, but still only as part, and not even the dominant part. At this stage in time, when acupuncture as a science is still a budding discipline here in Indonesia, the lessons are still very much person-centred. Computer applications and internet materials can be very helpful, but the human factor in the learning equation is still perceived as more dominant and fundamental.

5. Limitations of this Study and Recommendation for Future Research

The low number of respondents could be considered the main limitation of this mini-research. More participants would mean more views and richer perspectives for analysis. However, the resultant data are substantial enough to render the findings valid. In terms of percentages, those who participated in the survey are more than half of the total population of both groups: the professors and the students. In the future, to further raise the level of responses, it would be ideal if the entire limited number of department members could get involved in the research process.

6. Conclusion and Implication for Practice

In China, where acupuncture is much more advanced and sophisticated, the discipline can be stricter and more intense, which means that the lessons can be much more comprehensive and demanding. In this context, digital tools play an important role in learning. They do not merely support learning. Instead, they really transform the way learning is done and interpreted. But such perception does not alter the order of things. Video lectures and face-to-face lectures do not necessarily compete but more so complete each other. Both led to the same end: the impartation of knowledge and the sustenance of a deeper human interaction. This is especially true in acupuncture. This is because, naturally, acupuncture is conducted through direct human touch. It starts with skin contact and goes deeper into every patient's heart and spiritual well-being.

This study aimed to explore how digital technologies can facilitate interactive learning in a 22-credit-theory module in basic acupuncture. The findings of this study illustrate how students and professors perceive the use of digital technologies as an integrated part of a study program in acupuncture education. The introduction of digital technology in education requires new technical skills in using digital tools and the acumen to align them to the educational program's professional needs.

The research data shows the unpreparedness of UKDC with the necessary shift in teaching and learning acupuncture heavily through the aid of digital technology. This is due to the lack of updated technological tools and the technical know-how of some professors and students in using them. This study raises the awareness that these steps are crucial in the advancement of acupuncture in this era of digitalization. This study also pointed out the benefits of both online and face-to-face learning. There is no need to choose one and deny the other. Both ways can be carried out productively and efficiently. Both face-to-face and

online classes have a place in highly digitalized learning, especially in the case of acupuncture education. What is considered indispensable is the direct human touch element in the study of acupuncture. It cannot be set aside since to do so would mean the denial of the very essence of the discipline, which is the human touch and direct physical contact for accurate prognosis to attain integral human healing and well-being.

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