Online Integrated Platform for Self-Development: Thai Teachers in Remote Area Case

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Abstract

This study aimed to: (1) explore case study teachers' attitude toward essential characteristics of Online Integrated Platform (OIP) for teachers' self-development and (2) develop an OIP model for Thai teachers' self-development. Six cases of Thai teachers in remote area schools in two Northern provinces of Thailand had engaged in a one-month service on a mockup Online Integrated Platform integrating closed Facebook group, Line application, and Zoom conference system. An individual and group observation, in-depth interviews, and focus group interviews were carried out for data collection during and after the completion of service. These collected data were analyzed utilizing content analysis and subsequently developed the OIP model for Thai teachers' self-development. Findings revealed case study teachers' positive attitudes toward the effectiveness of the OIP characteristics including three essential types of features and seven essential attributes in enhancing their self-development. The former consisted of three most preference features: Community Networks, Online Workshops, and Data Catalog. The latter consisted of seven attribute: facilitate personalized options; provide diverse and systematic categorized data; facilitate access of hard-to-reach resources; provide reliable content that foster creativity contribution; provide real-time information updates; facilitate with the modern system ensuring easy access, swift information retrieval, and time savings; provide user-friendly services that not only get the job done, but also create enjoyable and attractive experiences. In conclusion, with OIP personalized features and attributes that genuinely reflected the needs of teachers indicated a new paradigm for human resource development. OIP, therefore, serves as an alternative to the conventional face-to-face learning approach.

Keywords: Development, Online, Platform, Teacher, Technology

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แพลตฟอร์มบูรณาการออนไลน์เพื่อการพัฒนาตนเอง : กรณีศึกษาครูไทยในพื้นที่ห่างไกล

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บทคัดย่อ

การวิจัยครั้งนี้มีวัตถุประสงค์เพื่อศึกษาทัศนคติของครูกรณีศึกษาที่มีต่อลักษณะเฉพาะของแพลตฟอร์มบูรณาการออนไลน์ และพัฒนาแพลตฟอร์มบูรณาการออนไลน์เพื่อการพัฒนาตนเองของครู โดยคัดเลือกครูไทยที่สอนในโรงเรียนห่างไกลในภาคเหนือของประเทศไทย รวม 6 คน เป็นกรณีศึกษา เก็บรวบรวมข้อมูลด้วยการสังเกต การสัมภาษณ์เชิงลึก และการสนทนากลุ่มในระหว่างและหลังการใช้บริการแพลตฟอร์มบูรณาการออนไลน์จำลองที่ประกอบด้วย กลุ่มปิดเฟซบุ๊ก แอปพลิเคชันไลน์ และการประชุมซูม เป็นเวลาหนึ่งเดือน วิเคราะห์ข้อมูลด้วยวิธีวิเคราะห์เนื้อหาและนำมาพัฒนาแพลตฟอร์มบูรณาการออนไลน์ ผลการวิจัยแสดงทัศนคติเชิงบวกต่อประสิทธิผลของแพลตฟอร์มบูรณาการออนไลน์ 3 รูปแบบ คือ เครือข่ายชุมชน เวิร์กช็อปออนไลน์ และแค็ตตาล็อกข้อมูล และ 7 คุณลักษณะ คือ บริการที่ตอบสนองความต้องการเฉพาะกลุ่มและเฉพาะบุคคล บริการให้ความช่วยเหลือหลากหลายและจัดอย่างเป็นหมวดหมู่ บริการทรัพยากรที่เข้าถึงยากตอบสนองความต้องการครบถ้วนและครอบคลุม บริการเนื้อหาข้อมูลที่น่าเชื่อถือและส่งเสริมให้เกิดความคิดสร้างสรรค์ บริการอัปเดตข้อมูลแบบเรียลไทม์ บริการระบบที่ทันสมัย เข้าถึงได้ง่าย รวดเร็ว และประหยัดเวลาในการค้นหา และบริการที่ให้ความเพลิดเพลินและดึงดูดความสนใจในการใช้งาน สรุปได้ว่า แพลตฟอร์มบูรณาการออนไลน์นี้สะท้อนความต้องการของครูได้อย่างแท้จริง จึงทำให้เกิดกระบวนทัศน์ใหม่ในการพัฒนาทรัพยากรครู และจะเป็นทางเลือกใหม่ นอกเหนือจากรูปแบบพัฒนาครูแบบดั้งเดิม

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Introduction

One of the most important problems in education is the problem that arises from teachers which is considered an important mechanism in the learning management process. Huang et al., (2021), for instance, indicated that teachers lack self-development causing by many reasons, such as lacking time and resource or having large and diverse workload. The time available for learning new things has been limited. For this reason, knowledge and experience cannot be effectively transferred to learners which are seen as having a negative impact on student learning. Moreover, they are unable to develop new skills and knowledge consistent with global changes. In addition, most education systems do not have clear professional development structures for teachers to self-develop necessary skills or innovations in teaching management (Stavroulia & Lanitis, 2017). Besides, effective dynamic evolution of strategies in cultivating teachers as lifelong learners is not only crucial for a nation's global advancement but also affects quality of learning management for learners (Huang et al., 2021). For these reasons, educational scholars have agreed to prioritize the self-development of teachers to enhance learners' potential and contribute to the global advancement of the nation.

Fortunately, technology has been emerged and recognized as a new approach challenging the goal of addressing remote area Teachers' lack of access for skills training instead of traditional teaching and learning methods. Impact of online technology on education (28%) and the human resource development (24%) were found (Perkins Coie, 2020). Technology may not only help promote the teacher's self-development process but also enable Teachers to receive feedback and gain knowledge through organizing learning and providing information that can be transferred and applied to real-life situations (Stavroulia & Lanitis, 2017). Online and virtual environment similar to real life environment, for instance, allows Teachers to practice their skills, experiment, test their skills, make mistakes, and learn, and helps reducing the risks of making mistakes in real-life and enabling their application of the acquired knowledge to promote self-development management including appropriate classroom management (Stavroulia & Lanitis, 2017).

Figure 1 showed that in the past 20 years from 2000-2019, many scholars (e.g. Heng Luo et al., 2021) studied the success of creating efficiency in the use of online integrated technology (e.g. Virtual Reality: VR) on the education industry.

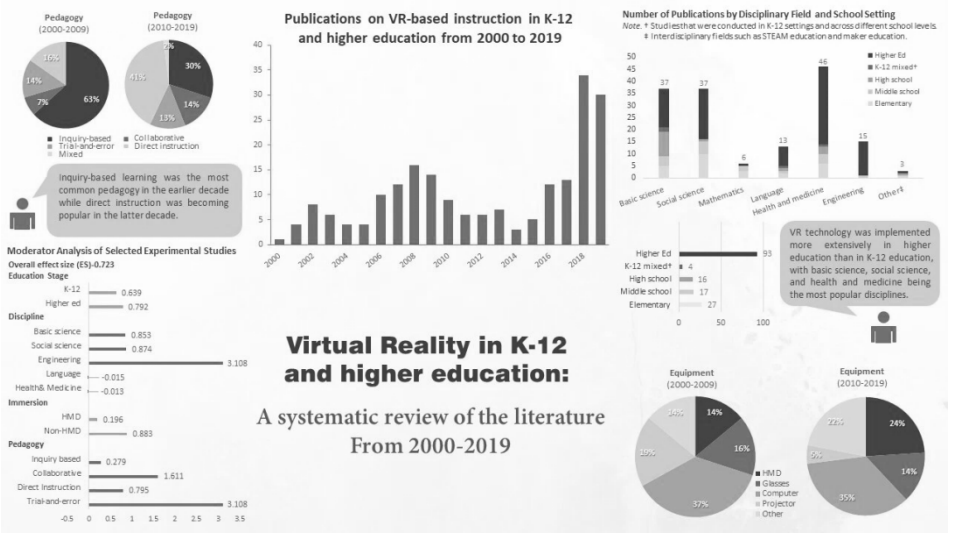

Figure 1: 20 years of research on the use of online technology in education

Sources: Heng Luo et al., (2021)

This is to understand the reasons behind its success to be able to verify whether it helps increase learning efficiency. Helping learners enter the virtual world of content make the learning process interesting. It leads to deeper absorption of the content; creates a memorable learning experience; increases educational skills development; and easy-access to content. Collaborative learning in virtual reality makes it possible to learn and exchange opinions with each other effectively including encouraging learners to develop technology skills and use of technology. It can be concluded that virtual technology has a positive relationship with teacher self-improvement in developing their expertise in various areas through practice experiences in realistic situations or simulations of learning management situations.

Besides, the collaboration of online technology toward human resources development, with its outstanding attribute in long distance support; it has been considered to reduce an obstacle within the process of human resource development and to address the gaps in regional disparities. This project also intended to testify the effectiveness of long distance service, therefore, remote schools in Chiang Mai: a province in an educational sandbox area and Chiang Rai: a province in highland area, were selected instead of the city and urban schools.

In conclusion, the relationship between virtual technology and educational development has been positively shown in many dimensions: professional development; professional growth; as well as pedagogical development. Hence, it may be a challenging new goal to promote the study and experiment applying online technology to help create teachers' self-development and improve their teaching and learning management. Accordingly, Online Integrated Technology application will create a new paradigm to serve as an alternative to the conventional face-to-face learning approach for human resource development. Also, it impacts on the development of teachers' resource potential which has been recognized as an important factor in creating the country's economy growth to engage on present and future global competitiveness.

This study aimed to explore Thai teachers' attitude toward the essential characteristics of Online Integrated Platform (OIP) for self-development and 2) develop an OIP model for Thai teachers' self-development in remote areas. In pursuit of these aims; case study approach was utilized to authentically capture teachers' needs fostering genuine reflection and ultimately enhancing their potential for self-development.

Literature Review

Since 1990, previous studies indicated both positive and negative impacts of online technology on human resource development, especially in an educational human resource development area. However, some studies (e.g. Aggarwal, 2009 and Tripathi & Verma, 2019) exhibited positive influences of online technology on enhancing Teachers' human resource skills and development. This is in regard to

the provision of rapid access, personalization, diverse information, and large content volumes. In accordance to this cause, the following comprehensive concepts were reviewed to analyze the collected data: theories of self-development; and online technology and self-development.

Theories of Self-Development

This research applied two concepts of the self-development theories that were consistent with the study of human learning behavior: self-regulated learning (SRL); and self-determination: (SDT) (Deci & Ryan, 1985). SRL explains that learning styles linked directly to motivation (Azevedo, 2009) and inspiration (Schunk, 1999) through the learning process that influences self-directed learning. Therefore, it is believed that people who are able to control themselves are intrinsically motivated and independent enough to exercise self-regulation. This enhances their capability to learn and control learning process in order to achieve their goals effectively (Zimmerman, 1997). However, it requires explicit support and assistance or teaching to practice and develop self-regulation (Pintrich, 2000). It asserted that learners with high self-regulation tend to adjust their learning methods to achieve their goals effectively (Winne, 1997) and will experience success in their learning (Pintrich, 2003).

Whereas, self-determination (SDT) (Deci & Ryan, 1985) explores the motivations and needs that drive human behavior. It proposed that human beings possess the desire and needs to grow and develop themselves by giving importance to freedom in decision-making and work. It enhances their satisfaction and happiness on life through the connection of three important principles. Firstly, the principle of autonomy focuses on the freedom to make decisions and act according to one's own needs. Secondly, the principle of competence focuses on ability and knowledge in performing various tasks or work. Lastly, the principle of relatedness focuses on confidence and good relationships with others (Deci & Ryan, 2002; Ryan & Deci, 2000). When these needs are responded, individuals will be motivated to drive their positive behavior and fulfill personal needs. In the contrary, if these needs are not responded, a person may feel irritated, anxious, or even depressed to the point where motivation

may decrease which affects negative change (Deci & Ryan, 2012). Therefore, SDT will be deployed to develop and strengthen the motivation to create better self-well-being of individual affect positive behavior change (Vansteenkiste et al., 2020).

Online technology and self-development

Forms of distance education encompass various technology applications and learning processes through online technology. Teachers and learners, regardless of locations and times, converge in an online environment to engage in educational activities facilitated by an internet connection (Gomezelj & Čivre, 2012; Urdan & Weggen, 2000). This study focused on the integration of three applications with outstanding "Characteristics": Closed Facebook group, Line application, the Zoom conference system. They were indicated to promote users' satisfaction and enhance self-development. However, as mentioned above, online technology may or may not create a positive impact on every circumstance.

Studies on positive impacts of online technology (e.g. Asoodeh et al., 2012; Li et al., 2019) stated that they were alternated a database for users to access through the website. They provide the availability of various types of information or resources: online books, articles, research, videos, and other training software (e.g. Aytaç & Kula, 2020; Asoodeh et al., 2012; Avalos, 2011; Darsih, 2018; Li et al., 2019). In teaching and learning aspect, online technology not only serves as a system helps teachers access training courses, tutorials, and other learning materials online (Avalos, 2011; Li et al., 2019) but also serves as an online document resource storage that can be accessed through the website. Within this website, there will be books, reports, articles, and other documents and collections of educational resources, including textbooks, journals, and research articles that teachers can access online (Darsih, 2018).

Also, an online platform providing the video conferencing enables users to exchange knowledge and experiences. Discussion forums, for instance, allow teachers in a network(s) to interact with each other, share experiences and insights on various educational topics. It creates spaces for teachers to exchange knowledge, ideas, and experiences in groups using a video conferencing to easily connect with others.

This can be applied to learning by creating an online classroom and having teachers or experts join in to teach or explain various contents to students (Aytaç & Kula, 2020; Cui & Fang, 2018; Li et al., 2019). Also, it allows feedback and evaluation exchange among mentors or peers (Harks et al., 2014; Hattie & Timperley, 2007).

Apart from that, interactive online technology such as virtual reality allows users to create virtual situations for learning. Users were able to design and control their own learning. It is a space allowing teachers to create online lessons, manage teaching, evaluate results, and track their own teaching or learners learning results (Aytaç & Kula, 2020). Its real-time conversation feature provide guidance and support for teachers through virtual communication channels (Lau, 2012; Li et al., 2019) on online platforms such as Facebook, Zoom meeting, and LINE application. A real-time conversation function allows users to communicate, talk, and give feedback and assessment to each other comfortably.

According to many research studies, it has been found that online technology facilitated self-learning with Internet as a medium, different from Person-to-Person or Face-to-Face learning occurring in regular classroom or training (Campbell, 2004; Sigala, 2002; Sisson & Kwon, 2020). The role of online technology in organizing online learning may be different depending on each context and various characteristics (Rapanta et al., 2020). Aguilar et al. (2017) Campbell (2004) and Gomezelj & Čivre (2012) confirmed the positive and negative role of online and virtual technologies in affecting self-learning development.

The main social challenge features of smart classroom technology include the adaptation ability to personalization (Alfoudari et al., 2021). Smart classrooms can maintain convenience, health, and safety by supporting personalized features (Choi & Suk, 2016; Lee, 2015; Ouf et al., 2016; Sevindik, 2010; Uzelac et al., 2015; Vasanthapriyan & Randima, 2019; Zheng et al., 2019). This affects the challenge of adapting the environment to promote private learners' learning attitudes and motivation (Aguilar et al., 2017; Munawar et al., 2018; Tlili et al., 2019). It can be concluded that the success of a smart classroom depends on its personalization characteristic (Miraoui, 2018; Godlewska et al., 2019; Pardini et al., 2022).

Online technology in particular, e-learning platforms has both positive and negative effects on learning management. E-learning platforms, for instance, are viewed to be more flexible in learner-centered learning management than traditional formats for positive impact (Dhawan, 2020). Also, it helps improve interactions among learners by providing varieties of asynchronous and synchronous tools such as e-mail, forums, chat, and video conferencing (Anwar & Adnan, 2020).

Livari (2005) stated about content or information quality in online tools or platforms that the quality of system and information affects individual users, especially the quality in terms of reliability such as real and clear references. This is in line with Eoma et al. (2012) confirmed about "Efficiency Model" (DeLone & McLean, 2003) consisting six measures of success included interrelated and interdependent; system quality; information quality; usability; users' satisfaction; personal effects; and the influence on the organization.

In terms of negative impacts, previous studies (e.g. Yusuf & Al-Banawi, 2013) found that online technology in the form of e-learning still has some elements that may be considered obstacles to the learning process of an individual. It may reduce learner's motivation on account of delays in responding or requesting assistance of teachers or service providers or feel isolated due to lack of classmates' relation. However, researchers suggested that if teachers or service providers contain good experience and knowledge about teaching in online environments, they will develop or adapt strategies to respond to the needs of learners. So that learning can proceed effectively as well.

In conclusion, related studies have found both positive and negative effects of online technology (e.g. Aggarwal, 2009; Tripathi & Verma, 2019) since the 1990s. Teachers view that the positive impact of technology on education is that it drives teaching and learning in a powerful manner. Technology advancement provides rapid, easy access personalized system, extensive different types of information, and multiple information availability which are pleasurable and convenient for learners. This will impact on self-development and skills improvement which leads to elevate the country's potential toward the global goal.

Methodology

A case study approach design was used comprising three main phases. Data collection involved observation, focus group discussions, and in-depth interviews. These data collection methods sought to elicit diverse attitudes and perspectives of cases toward the effective and appropriate attributes of an online platform for Thai teacher self-development. Participants engaged in a series of five activities within the PDSA (Plan-Do-Study-Act) steps, as outlined by Deming (1986), to gather these insights. Subsequently, the collected data were utilized in the development of a model for an online Integrated platform (OIP) customized to the authentic needs of Thai teachers. Finally, all participants, involving case study teachers and guest experts, evaluated the model's effectiveness in the data return process (RECAP), incorporating reflection, feedback, and evaluation programs.

Case participants were six cases separated into two groups of Thai teachers. Group one included three cases of secondary school teachers from Chiang Mai: a province in an educational sandbox. Group two comprised another three cases of secondary school teachers from Chiang Rai: a province in highland area. Six cases were selected to represent subjects relating to 21st century skills: science and technology; language, and mathematics. Teacher Krai and Teacher Thip, two of them, taught science and technology. Another two cases taught language: Teacher Mas taught Thai language and Teacher Sud taught an English language. The rest two cases taught mathematics: Teacher Chet (moved to another province and being substituted by Teacher Phet who possessed same qualification) and Teacher Kwan. A case study selection criterion was based on location: educational sandbox area and highland area; age: under 35, English proficiency: communication basis; and willingness to participate.

The mockup design of Online Integrated Platform (OIP) for teachers' self-development involved two teaching peers with expertise in project-based learning and new media teaching and eight experts, both domestic and international, with diverse expertise in educational and institutional management, human resource development, project-based learning management, teacher development, and educational technology.

A series of five activities follows Deming's PDSA cycle (Deming, 1986), structured into four distinct steps.

In the "Planning Step," concepts and theories were examined, and research activities were designed to identify focal areas and suitable case studies. This step contains Activity 1 involving a 3-day workshop delving into cases' needs. Simultaneously, one group worked on-site whereas another group worked online; with the researcher as on-site facilitator. Conditions and problems or challenging points were seeking through groups brainstorming. Brainstorm summarized report in regard to their essential needs toward employing online platform to serve and facilitate their self-development process were conducted by case groups. This followed by individual in-depth interviews and focus group interviews during the meeting. Researchers utilized digital devices, notes from the researcher, and self-notes from the cases to record participants' performance, attitude, and perception. The collected data were then employed in designing the mockup platform.

In the "Doing Step," a mockup online platform has been designed utilizing collected data from Act.1 for implementing in a design-based approach in Activity 2. Each case was involved in the service of a mockup online platform on a closed Facebook group providing varieties of useful information according to data collected in Act.1, such as dissertations, research, articles, organization and colleagues' websites, links, and work-supported applications such as ChatGPT, videos, audio, and online books. Mockup design has been adjusted toward users' reviews and comments during the implementation session. Users' needs were collected through in-depth interview and focus group discussion to develop the next activities.

According to developed design from Activity 2, the Activity 3 and 4 were conducted via Zoom meetings with the purposes to enhance and provide opportunities for experience sharing and knowledge exchange with teaching peers and experts. First meeting was utilized to serve users' needs to exchange knowledge, experiences, and ideas among peers. The second one was utilized to serve users' needs to exchange and gain interesting and invaluable knowledge, experiences, and ideas from Thai and Japanese experts. The meetings were operated in English language. The LINE application

was used for coordinating meeting appointments and exchanging various types of information. In each of these activities, the researcher assumed dual roles of facilitator and observer. Cases provided their insights through in-depth interviews, and engaged in focus group discussions to capture their attitudes and feedback, both during and after the service trial.

The "Study Step" entailed rigorous qualitative data analysis from Activities 1 to 4.

In the "Action Step,", combined results of data analysis were utilized to develop an initial model for Online Integrated Platform (OIP). Finally, case participants and guest experts evaluated the developed OIP model to refine its design, specialized for their unique self-development needs.

Qualitative collected data from individual and group observation, in-depth interviews, and focus group interviews were analysed using content analysis methodology (Krippendorff, 2004). Data was systematically organized into data categories, subject to data coding and grouping, then, subsequently extracted into significant concepts conforming pre-defined research objectives: characteristics including feature and attribute. Experts and a research consultant investigated these analytical findings. Experts and cases reflected on OIP design outcomes for effectiveness and satisfaction evaluation in a RECAP process before finalizing OIP design development.

Results and Discussion

Findings revealed cased teachers' positive attitude and satisfaction toward the effectiveness and appropriateness of OIP characteristics: main features and essential attribute. The data analysis result from both individual and group observation, including in-depth interviews and focus group interviews exhibiting its three main features and seven attribute were as follow.

Analysis results of case study attitudes toward OIP's three main features

Majority of case study teachers perceived three distinctive features: Community Network; Database Catalog & Search Engine; and Web/Online Workshops, are the most important one in enhancing self-development. They emphasized their satisfaction toward the three distinguished features impacting their self-development activities. The followings results highlighted the key points of their satisfaction supported by the excerpts from in-depth and focus group interviews.

Toward **"Community Network"** feature, major cases agreed that online network service in the form of community network with both peers and experts' involvement was one of their top three preferring features. They perceived "community network" beneficial to their daily works for it provided feedback and comments among peers' teachers to *"helps build confidence"* and *"...support work effectively."* The majority of cases satisfied the moment they exchanged knowledge and enjoyed question & answer session during a mockup OIP service process in activity 3 and 4: Zoom meeting. T.Kwan conveyed her opinion that "*..the information and knowledge exchanges help improve me, through feedback and commendations."* During the focus group interview after the session, T.Thip also summarized that *"It's necessity of building networks within teacher groups."* At the end of the last session, they suggested creating OIP in the form of a virtual reality (VR) would be more preferable as T.Thip added, "*I would like to have online counseling from a famous person in various matters that are difficult to find in person in everyday life*." T.Mas recommended to *"provide a virtual network of people on an online platform that makes it easy to reach people, both fellow teachers and famous experts."* She added the reason that "*Because if there is a function that opens up the opportunity to ask for advice or exchange online in real time, Teachers will be able to find the guidance or information they need to make accurate decisions."*

Moreover, more majority's agreement revealed in the following focus group excerpts.

"Consulting or exchanging knowledge and experiences on online device can give us the right direction. It helps to get answers or information that is relevant."

"Direct access to individual resources, easy and not as complicated as other format."

"Online network helps build confidence in supporting work well."

"We do it in a parallel manner, giving advice, criticism and evaluation because it will lead to all-round development of work and can be further developed into work to request a position evaluation."

"Online mentoring helps organize ideas or helps us become more confident. As for giving feedback and evaluation, if it were in the form of a certificate, it would be great."

"Because when we have a project to create, there may be some issues such as lack of experience which is an obstacle to the success of the project. If we receive feedback, it can be used to improve the project."

"We have a real desire to use the center because in some projects we may need to use the center to build a network of teachers which is easily accessible."

"Database Catalog & Search Engine" feature was considered one of the most important features since it provided handy and useful databases or catalogs, including academic journals, newspaper, printed media, or databases from other specific sources such as books, other journals, videos, images, or other types of information, arranging in categories. They satisfied in that it *"provides varieties of information services truly responding to our needs which reinforces the issues that we lack experience."* T.Krai supported that *"There is a database that is easy to access and use, not complicated."* T.Sud added her opinion that *"A database with reliable information content have a clear reference source, it really works."* T.Phet agreed to*"organize information into categories like a catalog in order to access information easily and quickly."* Majority's opinions revealed that OIP "*has easily accessible and user-friendly databases."* In the session of 2nd activity mockup OIP providing a variety of information with different categories of knowledge and data such as research and academic articles, the majority of cases had mentioned that *"Organize data categorically to facilitate quick access."* T.Kwan supported "*Reliable content and*

clear references are practical to use." Besides, T.Phet suggested the same ideas for the extension of specific "Search Engine" service providing in OIP in the future.

The opinions of a majority were further revealed in the following excerpts from the focus group.

"OIP services a variety of data in regard to necessary requirement to resolve the problems and enhance work experiences."

"Categorized database is not complicated, it is easy to access and use, and times efficacy."

"A database with reliable information content served with clear references."

"OIP provides a catalog organizing data and information into appropriate categories in order to help us access to valuable information easily and quickly."

Cases' suggestions toward **"Web/Online Workshops"** had been raised after the Zoom meeting trial. The majority of the cases indicated that services of the OIP model arranging in the form of networking, online workshops, or webinars allowed the opportunity to exchange experiences with peers and organized chances for experts to provide them advice, feedback, and evaluation. They reflected that *"A workshop on online platform allows real-time consultation or exchange information needed for accurate decision-making."* Not only that, they stated that they admired the activities OIP provided them an opportunity to meet famous experts they had known but have never met in person before. They demonstrated their dependability through the involvement of both the internal and external guest experts that *"Online consultation offers accurate guidance and information."*. Additionally, they thought that the session help *"boosting confidence in work support."*

The attitudes of a majority toward mockup web/online workshops on OIP were further revealed in the following excerpts from the focus group.

"We appreciate the service of online counseling from famous experts, it is not easy to meet them in person that we are in remote areas. They mostly stay in Bangkok, we cannot see them and have chances to meet them in daily life."

"OIP center workshop offer a virtual networking service on an online manner that makes it easy to reach both fellow teachers and experts in and out of the country."

"Because a function that opens up the opportunity for us to Q & A with external and international level experts for advice or ideas exchange in real time make us feel confidence to communicate in English."

"... guidance or information we received from distance experts help us much with the needs to make accurate decisions in work and teaching plan design."

"Consulting or exchanging knowledge and experiences online help us improve our decision making in the right direction."

"OIP service with online workshop helps build our confidence in supporting self-development and creating work well."

"... in a parallel manner, the advice, criticism and evaluation comments lead to self-development and can be further for job and occupation development."

"Online mentoring from experts and peers as for giving feedback and evaluation helps in ideas organization and helps us to become more confident."

In conclusion, the majority of case study teachers summarized that "*Because our main issue on lacking of experience is an obstacle to success, receiving feedback can improve our confidence building. We perceived that it not only led to the success of our work project but also positively affected our students' improvement."* In addition, they assisted that "*We desire to use the real OIP center service in the future. We need to use the center to build networks and assist us side-by-side for self-development."*

Analysis results of case study attitudes toward OIP's seven essential attributes

Additionally, the findings exhibited positive attitudes toward the OIP model's seven essential attributes of OIP model including 1) facilitate personalized options; 2) provide diverse and systematic categorized data; 3) facilitate access of hard-to-reach resources; 4) provide reliable content that foster creativity contribution; 5) provide

real-time information updates; 6) facilitate with the modern service system ensuring easy access, swift information retrieval, and time savings; 7) provide user-friendly services that not only get the job done but also create enjoyable and attractive experiences., respectively.

The majority of teachers perceived the above attributes are most important. Opinions from case studies emphasized that they satisfied the impacts of each attribute providing by the OIP model on supporting their self-development activities.

For **"provide diverse and systematic categorized data"** attribute - The majority of case studies revealed their positive attitude toward OIP model in its provision of comprehensive and diverse assistance services with systematically content categorized to facilitate swift and straightforward access to information. They insisted that its "*help and support are fast and easy to search."* and "*help services make finding information faster."* Additionally, they agreed that OIP platform *"can help users in a variety of ways such in finding resources that are difficult to access for users, such as individuals or research data"*. Also, T.Kwan insisted that *"Help and support resources are convenient, fast, and easy to search."* One of them supported that "*Easy to access, easy to use, fast."*, another agreed that *"Help services and resources make finding information faster."* They summarized that *"Help and support resources should be first and foremost in your search to make your search easier and faster."* and added that *"It would be ideal if there is no mix-up of information requested by users providing in the platform like this."*

For **"facilitate personalized options"** attribute - Majority reflected that OIP model service options encompass functions designed to address the unique requirements of distinct user groups and individuals by offering assistance and a diverse array of resources. These functions were tailored to respond to and support the specific needs of individual users or targeted groups of users. They, for instance, admitted that "Personalized options & user responsiveness" attribute *"provide personalized options which is convenient."* and they mentioned that "*Yes, it's good at providing variety of information available to specific users. I like varieties of information available."* Also, *"There are options organized in a clear, systematic*

way so I can quickly find what I am looking for; makes it convenient and reduces time to search for information according to the needs and interests of each person.", T.Thip added. They supported that *"Providing clear, personalized options that are fast, convenient, time-saving, and enjoyable attracts attention and likely to use the service for longer times."* They perceived *"There is comprehensive assistance provided on an individual basis and can provide comprehensive and practical support."* Ultimately, they concluded that OIP platform service created the environment that *"Diversity of users is equal."*

For **"facilitate access of hard-to-reach resources"** attribute - Majority of case studies found that OIP provided the existences of resource comprehensively addressed the challenging access requirements of users, encompassing the most essential aspects. T.Thip declared "*The content is reliable."* Moreover, she gave credit to OIP model that "*There is a clear origin and reference."* T.Thip and T.Mas also added that *"It provides users with difficult to access people or data."* and *"The information is covered in every aspect."* Additionally, *"It can help us in a variety of ways and can provide us with resources that are difficult to access, such as people or research data.",* T.Kwan added. Moreover, they concluded that "*The information is well covered and complete in every aspect. OIP service is able to respond to most needs".*

For **"provide reliable content that foster creativity contribution"** attribute - Majority of case studies asserted that OIP model contains reliable information and clear reference sources which support academic works and encourage their creativity. T.Krai, T.Sud and T.Mas conceived that OIP model *"can help create new ideas"* and they think they can rely on the content provided *"The content is reliable."*, "*There is a clear origin and reference."*, *"It makes the developments that happened being trusted.", and* the content provided "*can be used as a reference source in academic work*." In addition, T.Kwan perceived that the OIP model can enhance their creativity because *"It is with various media that everyone can access so it helps boost my ideas."* and *"There is diverse search functionality that support my need to create works."*

For **"provide real-time information updates"** attribute - Majority of case studies were likely to satisfied OIP model's Up-to-Date real-time information. They perceived that the content provided in the system has been updated regularly and in a timely manner. They satisfied that *"The information is updated regularly in real time."* T.Sud stated that *"Timely!, I can get data in timely manner and I notice the information got in hand as specified by the peers who requested it."* We *"get up-to-date information and use information in a timely manner."* T.Thip finally concluded that *"The platform database should be updated in real time to encourage continuous work."*

For **"facilitate with modern service system ensuring easy access, swift information retrieval, and time savings"** attribute - Majority agreed to the idea that the OIP model is a modern, convenient, and easily accessible system. The service system they explored prioritizing easy access, swift information retrieval, and time efficiency. T.Krai, T.Sud and T.Mas insisted that OIP model is *".. is easy to use. Because it is social media that everyone can easily access."* Apart from that they added that *"The system is modern and very convenient.", "Save time searching for information", "Convenient, fast, easy to use", "Easy to use with modern multimedia", "The system is very convenient and save time searching.", "Convenient, fast, easy to use",* and *"A variety of devices used is easy to use and modern.".*

For **"provide user-friendly services"** attribute - Majority of teachers accepted that OIP model provided services that are enjoyable and attracted their attention that they were willing to use for longer period. They perceived that the service not only help get jobs done, but also create their enjoyable experiences while accessing the services. One of them remarked that *"There is enjoyment in using it. It is attractive to use for a long time."* and another one supported *"I agreed, I enjoy using it and can use it for longer period."* They also expressed their overall attitude toward the service that *"Overall it can be used well and we will recommend to others to use"* and *"It's easy to access and enjoyable so that it will cause more users to come back and use it."*

Online technologies represent forms of distance education that utilize various technological applications and learning methods. Even though, previous studies indicated online technologies to have both positive and negative impacts on human resource self-development and attitudes, the majority of analyzed results in this study revealed its impacts on the positive side.

The research emphasized the role of the Online Information Platform Center (OIP) in promoting teacher self-development, particularly in remote areas. Findings revealed case study teachers' positive attitude that OIP has facilitated and satisfied their self-development activities through three distinctive features, including the Community network, Database catalog & search engine, and Web/Online workshops as principal for their professional growth.

Database Catalog & Search Engine was utilized for accessing learning resources, **Community Network** was employed to assist knowledge and experiences exchange and network collaboration, and **Web/Online Workshops** or virtual mentoring provided services for real-time support from colleagues and experts. This supported research outcomes of Pintrich (2000) Winne (1997) and Zimmerman (1997) emphasizing the improvement of self-regulation which is essential for goal achievement and teachers' self-development contribution in order to enable effective learning and success.

Earlier studies, such as Asoodeh et al. (2012) and Li et al. (2019), focusing on 'Online database,' enabled teachers to access various types of information related to their interests. This is in line with research outcomes of Aytaç & Kula (2020) Cui and Fang (2018) Harks et al. (2014) Hattie & Timperley (2007) and Li et al. (2019) focusing "Community network" that creates spaces for teachers to interact, exchange knowledge and ideas, and share insight experiences on various topics. Apart from that, it is in agreement with findings of Lau (2012) and Li, et al. (2019) focusing "Online workshop" which provides variety of the real-time communication channels allowing users to communicate, talk, and give feedback and assessment to each other.

Case study teachers recognized **OIP "Community Network feature"** as a crucial device creating enriched opportunities for collaboration among peers and experts even in remote locations. They expressed their preferences for an extension

of a virtual reality (VR) format enlarged the needs for innovative and accessible networking opportunities. They also valued OIP as a center capable to create opportunities fostering their collaboration and enhancing their confidence; it impacted on self-development. This is in agreement with Aguilar et al. (2017) who stated that online platform was able to facilitate knowledge exchange, feedback, and question-and-answer sessions.

Additionally, case study teachers appreciated **OIP Database Catalog & Search Engine** with its provision of user-friendly organization and accessibility of information services. It is in agreement with Livari (2005) stated that database with the reliability of content, clear references, and categorized databases, emphasizing the significance of streamlined information retrieval in supporting users in remote areas work flow.

Case study Teachers expressed their satisfaction toward OIP **Web/Online Workshops** with its provision of real-time consultation, feedback, and evaluation through web workshops emerging as invaluable resources which was also concluded in the findings of Livari (2005). They perceived the positive impact of online workshops on boosting confidence, providing accurate guidance, and fostering self-development. They expressed their preferences to use the OIP Center in the future in regard to its potential as a crucial resource for building networks and advancing continuous professional development.

To sum up, the findings presented in this discussion accentuates the substantial positive impacts of online technology, particularly the Online Information Platform (OIP) Center, on teacher self-development in remote areas. The OIP's Community Network, Database Catalog & Search Engine, and Web/Online Workshops features played a significant role in facilitating knowledge exchange, providing accessible information, and offering real-time support (Aggarwal, 2009; Tripathi & Verma, 2019). Research findings highlighted the transformative potential of OIPs in addressing the unique needs of teachers in remote areas, fostering collaboration, and promoting continuous professional development. The OIP Center emerges as a crucial tool for elevating teacher self-development and skills improvement and a contribution to the overall enhancement of educational outcomes in remote regions.

Additionally, the study findings also exhibited the profound impact of OIP Center on the self-development of teachers in remote areas of Thailand. Besides,

positive attitudes and satisfaction towards the impact of seven essential attributes such as the utility of OIP services has been found. It supported previous studies' outcomes (e.g. Campbell, 2004; Sigala, 2002; Sisson & Kwon, 2020) confirming a positive role of online technology as a medium distinguishing Face-to-Face learning from online learning in its well-organized various context.

Seven essential attributes: personalized options, diverse and systematic categorized data, hard-to-reach resources, reliable content, fostering creativity contribution, real-time information updates, a modern service system ensuring easy access and time savings, and user-friendly services, revealed its significance role in addressing the unique needs of teachers.

This is in agreement with Alfoudari et al. (2021) stating that the main social challenge features of smart technology include the adaptation ability to personalization impacting on users' satisfaction. Additionally, it supported the findings of Choi & Suk (2016) Lee (2015) Ouf et al. (2016) Sevindik (2010) Uzelac et al. (2015) Vasanthapriyan & Randima (2019) Zheng et al. (2019) mentioning about the support of essential features on promoting private learners' learning attitudes and motivation (Aguilar et al., 2017; Munawar et al., 2018; Tlili et al., 2019). Moreover, this is in accordance with the findings of Miraoui (2018) Godlewska et al. (2019) and Pardini et al. (2022) revealing impacts of virtual characteristics on enhancing personalized, reliable, convenient, comprehensive, accessible, and enjoyable environment which led to the success of teachers' self-development.

Apart from that, these outcomes are in line with Agyeiwaah et al. (2022) Chandrasiri et al. (2020) Pardini et al. (2022) Riches et al. (2021) and Shah, et al. (2014) finding that online technology were capable to create a positive environment for users' relaxation or enjoyment and facilitate stress reduction and lead to human relaxation. For this reason, it is considered as the most effective predictors of learners' satisfaction.

Although, this study finding is in contrary to Yusuf & Al-Banawi (2013) in terms of the negative impact of interactive elements considering as obstacles to the learning process of individual. That is, it may reduce learner's motivation on account of delays

in responding or requesting assistance. However, this study found positive attitudes of case study teachers' which is supported by the findings of Anwar & Adnan (2020) and Dhawan (2020) concluding that varieties of tools provided on virtual technology help increase flexibility of learning.

This is also in accordance with the statement of Livari (2005) Eoma et al. (2012) and DeLone & McLean (2003) stating about positive impacts of content or information quality and variety in virtual tools or platforms on users' satisfaction.

To sum up, the majority of teachers expressed satisfaction with the attributes, emphasizing the efficiency and convenience of the OIP in supporting their self-development activities. The OIP model's provision of comprehensive assistance services, personalized options, and reliable content not only facilitated rapid access to information, but also contributed to their creativity and academic work. Moreover, its real-time updates and user-friendly interface ensured for teachers to be well-inform es. Overall, the OIP Center emerged as transformative potency, significantly enhancing the professional growth and self-development of teachers in remote areas of Thailand.

In conclusion, several studies confirming and supporting the essential features and attributes of the OIP model have predominantly established its impacts on success in self-improvement and human resource development. As seen by Aggarwal (2009) and Tripathi & Verma, 2019 conclusion of positive effects of online technology on teachers attitudes that it drives self-learning in powerful manner. *"Technology advancement provides rapid, easy access personalized system, enormous different types of information, and large amount of information availability which are pleasurable and convenient to use for learners. This will lead to elevate country's potential toward the global goal."*

Conclusion and Recommendations

In conclusion, these research findings revealed a significant consensus among the majority of case study teachers' attitudes toward extensive importance of three distinctive features: community network, database catalog & search engine, and web or online workshops, in enhancing teachers' self-development. Their satisfaction

towards three distinctive features has been well-supported by interview excerpts emphasizing the transformative impact on their professional growth.

The "Community Network" feature was recognized as a key preference in teachers valuing the online integrated platform for facilitating their knowledge exchange, feedback, and question-and-answer sessions. Case study teachers expressed their preferences toward OIP virtual reality format underlining need for innovative and accessible networking opportunities and emphasizing its importance of effective collaboration among peers and experts. The "Database Catalog & Search Engine" feature has been considered as an essential device for its user-friendly organization and accessibility in providing varieties of information services that satisfy teachers' specific needs. In addition, the focus on its reliable content, clear references, and categorized databases affirmed the significance of streamlined information retrieval in supporting their work. Lastly, the "Web/Online Workshops" feature has been highlighted as a valuable resource for real-time consultation, feedback, and evaluation from peers and external experts. The positive impact of online workshops on boosting confidence, providing accurate guidance, and fostering self-development was observable in teachers' testimonials. They expressed their preferences to utilize OIP center in the future indicated its potential as a crucial resource for building networks, receiving assistance, and advancing self-development in the teaching profession.

Additionally, the study findings also exhibited the profound impact of the OIP Center on the self-development of teachers in remote areas of Thailand. Their positive attitudes towards the seven essential attributes of OIP model, including personalized options, diverse and systematic categorized data, hard-to-reach resources, reliable content, fostering creativity contribution, real-time information updates, a modern service system ensuring easy access and time savings, and user-friendly services, revealed its significance role in addressing the unique needs of teachers. The majority of teachers express satisfaction with the attributes, emphasizing the efficiency and convenience of the OIP in supporting their self-development activities. The OIP model's provision of comprehensive assistance services, personalized options, and reliable content not only facilitated rapid access to information, but also contributed

to their creativity and academic work. Moreover, its real-time updates and user-friendly interface ensured the teachers to be well-informed with information in their field while enjoying enjoyable and attractive experiences. Overall, the OIP Center emerged as transformative potency, significantly enhancing the professional growth and self-development of teachers in remote areas of Thailand.

Overall, findings emphasized the role of OIP Center in addressing the unique needs of teachers; fostering supportive environment for professional development; and cultivating teachers' self-development in becoming lifelong learners, crucial for elevating the nation's global advancement and learners' learning management (Huang et al., 2021).

The findings of the conducted research emphasized the significant role of the Online Integrated Platform Center (OIP) in promoting the self-development of teachers, particularly in remote areas of Thailand. The study highlights the positive impact of three key features - Community Network, Database Catalog & Search Engine, and Web/Online Workshops - on teachers' professional growth. This following recommendation aims to provide insights into how these features can be further advantage to advance teachers' self-development and contributing to enhanced education quality and overall national development.

The recommendation for accessibility and outreach in remote areas

1. Develop targeted outreach programs to ensure that teachers in remote areas are aware of and have access to the OIP Center's resources.

2. Implement measures to address potential challenges related to internet connectivity in remote regions, ensuring equitable access to the platform for all teachers.

3. Establish regional hubs or support centers to provide on-the-ground assistance and training for teachers in remote areas, further enhancing the effectiveness of the OIP Center.

The recommendation for continuous monitoring and evaluation

1. Institute a systematic monitoring and evaluation framework to assess the impact of the OIP Center on teachers' self-development and overall education quality.

2. Collect feedback from teachers, administrators, and education policymakers to identify areas for improvement and expansion of the OIP Center's features.

3. Regularly update and adapt the OIP model based on emerging trends in education, technological advancements, and the evolving needs of the teaching community.

The recommendation for further study

1. Investigate impact of collaborative initiatives between OIP Center and educational institutions on integrating online resources into teacher training, evaluating alignment with evolving teaching demands.

2. Explore global best practices in online teacher development, identifying successful international models, and fostering cross-border collaboration to facilitate the exchange of insights among educators worldwide.

3. Examine correlation between teachers' engagement with OIP Center, improvements in the student learning outcomes, and integrate research findings into education policies for evidence-based support and nationwide implementation.

In conclusion, the implementing of recommendations will not only bolster the self-development of teachers but also contribute to elevate education quality, consequently, national development. By continuously enhancing the OIP Center's features and expanding its reach; the education system can be fortified to meet the challenges of the future, ensuring that teachers remain at the forefront of innovation and professional growth.

References

Aggarwal, J. (2009). *Essentials of Educational Technology.* New Delhi: Vikas. Publishing House Pvt. Ltd.

Aguilar, Jose, Cordero, J., and Buendía, O. (2017). Specification of the autonomic cycles of learning analytic tasks for a smart classroom. *Journal of Educational Computing Research, 56*(6), 866-891.

Agyeiwaah, E., Baiden, F., Gamor, E., and Hsud, F. (2022). Determining the attributes that influence students' online learning satisfaction during COVID-19 pandemic. *J Hosp Leis Sport Tour Educ., 30,* 100364.

Alfoudari, A., Durugbo, C., and Aldhmour, F. (2021). Understanding socio-technological challenges of smart classrooms using a systematic review. *Computers & Education,* 173, 104282. https://doi.org/10.1016/j.compedu.2021.104282

Anwar, K.; and Adnan, M. (2020). Online learning amid the COVID-19 pandemic: Students perspectives. *J. Pedagog. Res., 1,* 45-51.

Asoodeh, M. H., Asoodeh, M. B., & Zarepour, M. (2012). The impact of student - centered learning on academic achievement and social skills. *Procedia - Social and Behavioral Sciences, 46,* 560-564.

Avalos, B. (2011). Teacher professional development in teaching and teacher education over ten years. *Teaching and Teacher Education, 27*(1), 10-20.

Aytaç, T., & Kula, S. (2020). The effect of student-centered approaches on students' creative thinking skills: A meta-analysis study. *International Journal of Contemporary Educational Research*, *7*(2), 62-80. doi: https://doi.org/10.33200/ijcer.723894

Azevedo, R. (2009). Theoretical, conceptual, methodological and instructional issues in research on metacognition and self-regulated learning: a discussion. *Metacogn. Learn*., *4,* 87-95. doi: 10.1007/s11409-009-9035-7

Campbell, L. (2004). *Department of Science and Mathematics Education.* The University of Melbourne; Melbourne.

Chandrasiri, A.; Collett, J.; Fassbender, E.; and De Foe, A. (2020). A virtual reality approach to mindfulness skills training. *Virtual Real.*, *24,* 143-149.

Choi, K., and Suk, H.-J. (2016). Dynamic lighting system for the learning environment: performance of elementary students. *Optics Express, 24*(10), A907. https://doi.org/10.1364/oe.24.00a907

Cui, N., and Fang, Z. (2018). An Empirical Study on the Effect of Group Cooperative Learning Mode on Medical Students' Autonomous Learning Ability. *Journal of Higher Education, 15,* 44-46.

Darsih, E. (2018). Learner-centered teaching: What makes it effective. *Indonesian EFL Journal*, *4*(1), 33-42.

Deci, E., and Ryan, R. (1985). *Intrinsic motivation and self-determination in human behavior.* Springer Science & Business Media.

_____. (2002). *Handbook of self-determination research.* University of Rochester Press.

_____. (2012). *Self-determination theory. In Handbook of theories of social psychology.* Sage Publications Ltd., pp. 416-437.

Dhawan, S. (2020). Online Learning: A Panacea in the Time of COVID-19 Crisis. *J. Educ. Technol. Syst*., *49,* 5-22.

DeLone, W., and McLean, E. (2003). The DeLone and McLeanmodel of information systems success: A ten-year update. *Journal of Management Information Systems, 19*(4), 9-30.

Eoma, S., Ashillb, N., Arbaughc, J.B., and Stapletond, J. (2012). The role of information technologyin e-learning systems success. *Human Systems Management*, *31,* 147-163. DOI 10.3233/HSM-2012-0767

Godlewska, A., Beyer, W., Whetstone, S., Schaefli, L., Rose, J., Talan, B., Kamin-Patterson, S., Lamb, C., and Forcione, M. (2019). Converting a large lecture class to an active blended learning class: why, how, and what we learned. *Journal of Geography in Higher Education*, *43*(1), 96-115. https://doi.org/10.1080/03098265.2019.1570090

Gomezelj D., and Civre Z. (2012). Tourism graduate students' satisfaction with online learning. *Turizam: Međunarodni Znanstveno-Stručni Časopis*., *60*(2), 159-174.

Harks, B., Rakoczy, K., Hattie, J., Besser, M., & Klieme, E. (2014). The effects of feedback on achievement, interest and self-evaluation: the role of feedback's perceived usefulness. *Educational Psychology, 34*(3), 269-290.

Hattie, J., and Timperley, H. (2007). The power of feedback. *Review of Educational Research, 77,* 81-112.

Heng Luo et al., (2021). Virtual reality in K-12 and higher education: A systematic review of the literature from 2000 to 2019. *Journal of Computer Assisted Learning* doi: 10.1111/jcal.12538

Huang, Y., Richter, E., Kleickmann, T, and Richter, D. (2021). *Virtual reality in teacher education from 2010 to 2020: A review of program implementation, intended outcomes, and effectiveness measures.* Springer VS Wiesbaden. Retrieved from http://link.springer.com/book/9783658378943 doi: 10.35542/osf.io/ye6uw

Krippendorff, K. (2004). Content Analysis: An Introduction to Its Methodology (2nd ed.) Thousand Oaks, CA: Sage Publications.

Lau, K. (2012). Instructional practices and self-regulated learning in Chinese language classes. *Educational Psychology, 32,* 427-450.

Lee, A. (2015). Authentication scheme for smart learning system in the cloud computing environment. *Journal of Computer Virology and Hacking Techniques*, *11*(3), 149-155. https://doi.org/10.1007/s11416-015-0240-4

Li, J., Antonenko, P., & Wang, J. (2019). Trends and issues in multimedia learning research in 1996-2016: A bibliometric analysis. *Educational Research Review*, *28,* 100282.

Livari, J. (2005). An empirical test of the DeLone-McLean model ofinformation system success, *The DATA BASE for Advances in Information System*, *36*(2), 8-27.

Munawar, S., Toor, S. K., Aslam, M., and Hamid, M. (2018). Move to smart learning environment: Exploratory research of challenges in computer laboratory and

design intelligent virtual laboratory for e-learning technology. *Eurasia Journal of Mathematics, Science and Technology Education*, *14*(5), 1645-1662. https://doi.org/10.29333/ejmste/85036

Perkins Coie (2020). *2020 Augmented and virtual reality survey report.* [Online] Retrieved from https://www.perkinscoie.com/images/content/2/3/v4/231654/2020-AR-VR-Survey-v3.pdf (August 14, 2023)