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Exploring Edutech-based Vocational Education and Training Model for Worker Training Programs

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[Abstract]

Education has recently witnessed a rapid increase in the use of edutech worldwide. This study focuses on Korean workers and explores an edutech-based learning model for vocational education and training. Based on analyses of edutech cases and interviews with edutech experts, a draft edutech model was designed and the validity was evaluated based on two Delphi surveys with a panel of experts in the field. The study's findings suggest that edutech-based employee education and training should prioritize LXP orientation (last CVR=1, last Mean=4.70) , implement adaptive learning through learning analytics (last CVR=1, last Mean=4.90), enhance the human touch effect using edutech (last CVR=1, last Mean=4.90), and emphasize the importance of designing curricula that apply edutech in a step-by-step learning process while incorporating suitable instructional design for the key technologies involved in vocational training programs. In addition, it was revealed that there is a strong need to implement a method that makes each stage of the learning process more effective (before, during, and after). Edutech-based vocational training program should consider the interests of all stakeholders, including learners, instructors, vocational training institutions, and government agencies. Given the promotion of government-sponsored vocational training projects in Korea, the findings of this research are likely to have significant implications for the future of Korea's education and training policies.

Key Words: Edutech, Vocational Education and training, Worker training program, Education and training model

I. Introduction

Using educational technology (edutech) can enhance learning effectiveness by combining technology with education to support educational goals. The Association for Educational Communications and Technology (AECT) defines edutech as "research and ethical practice that promotes learning and improves educational outcomes by creating, using, and managing relevant technological processes and resources" [1]. Edutech also includes instrumental features that support learning. It has been recognized as support technology not only for learning but also for education management and administration [2,3]. In addition, some views highlight edutech's role and potential in vocational training by defining edutech as "the application of trained knowledge to improve learning, instruction, and performance" [4]. The use of edutech is very wide ranging from support for instructional effects to interaction between teachers and students and educational administrative support. Edutech is significant in that it provides a new

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learning experience that is distinct from traditional teacher-centered and face to face learning experiences by combining media, design, and software technologies with the existing education system. Researchers and many educators have emphasized the environmental change of digitized education as an "opportunity for educational innovation" [5-7]. Since 2020, changes in learning methods following the COVID-19 pandemic have led to the growth of the global edutech market and accelerated the need to incorporate edutech in the vocational education and training areas [7]. In addition, in Korea's government-sponsored vocational competency development training project, policy consensus and demand for the importance and urgency of the Edutech-based training project are increasing [8].

In Korea and abroad, the trend of supporting lifelong education policies and vocational training has also accelerated through edutech technology that combines education and technology for effective education. in addition, demand for metaverse training institutes is already increasing in corporate education and human resources department (HRD), along with the trend to provide education that is tailored to the learners' level using an artificial intelligence (AI)-based personalized learning platform. The Korean government has announced a policy to address job fluctuations resulting from changes in the industrial structure. The policy aims to increase opportunities for lifelong vocational education and create a vocational training system that caters to the public demand for developing new skills [9].

Korea has placed significant emphasis on government-led vocational education and training, involving various ministries such as the Ministry of Employment and Labor. One notable initiative includes the development of public infrastructure in the field of edutech and the provision of vocational training for diverse groups, including underprivileged individuals. Consequently, there is a need to design a model for exemplary education and training based on edutech, while also seeking practical directions for implementing and sustaining innovative training methods. Particularly, as the vocational competency development market in Korea is predominantly driven by the government, many private training institutions are compelled to incorporate edutech-based training to receive incentives. Therefore, it is crucial to provide not only a clear definition of the edutech-based vocational education and training model but also guidance for effectively implementing the model to ensure equitable support. To address these requirements, this study suggests a foundational approach to edutech-based vocational education and training by incorporating LXP (Learning Experience Platform). LXP is an AI-driven peer learning experience platform delivered through the utilization of SaaS (Software as a Service). By leveraging these technologies, the aim is to establish a vocational education and training model that facilitates the creation and redesign of the education and training system.

II. Method and Evaluation

The Delphi survey method was used to explore an edutech-based vocational education and training model. The Delphi method is a communication structure for detailed critical review and discussion. The Delphi method is a process of surveying a panel of experts who respond to a questionnaire to arrive at a group opinion or decision [10]. The word "Delphi" comes from the fortune-telling activity of the prophets who gathered at the temple of Apollo in the ancient Greek city of Delphos. It is a research method for predicting and determining the future based on the intuitions or opinions of experts in the relevant field. This method collects and organizes expert opinions and makes collective judgments for various research purposes. In our context, the Delphi method is used to predict the future of educational development, set educational objectives and goals, develop curricula, solve educational problems, and enhance teaching and learning methods [11,12]. Delphi techniques can benefit from subjective collective judgment if the heterogeneity of the participants is well preserved to assure the validity of the results [13].

A. Design

To construct the specific Delphi survey questions, edutech-based vocational training cases studies were analyzed and in-depth interviews were conducted with vocational training teachers and experts. Before

investigating Delphi, six experts participated in the initial in-depth interview, including vocational education and training institutions representatives, general managers, professors in public vocational education and training, and edutech and vocational training HRD experts. The content for the next step of the investigation (i.e., surveying a panel of ten experts) was then derived based on data from several source: initial in-depth interviews, identifying keywords for edutech support, combined with case studies on teaching and learning design, collaboration among training institutions that develop and offer training courses, companies that develop and supply edutech, and the need to support digital competency according to the composition and roles of HRD practitioners participating in edutech-based training projects. It considers the maximization of educational effects based on the characteristics of each training area for the job. A draft for an edutech-based vocational education and training model was formed based on this background investigation and a Delphi survey, which was conducted twice to verify the validity.

B. Participants

A panel of ten experts participated in the Delphi survey (see Table 1). The validity of the model was then verified with two separate Delphi surveys. The experts included public officials from the Ministry of Employment and Labor, vocational competency development and training experts, heads of public online vocational training institutions, representatives of vocational training institutions, educational technology researchers, and researchers in edutech-related technical engineering. Both surveys were conducted via e-mail. After the researchers consulted and analyzed the data from the first Delphi survey, the second Delphi survey was completed. The final model was established following another round of consultation and analysis by the researchers.

C. Data Analysis

Data analysis of the first Delphi survey involved statistical methods and the content validity ratio. IBM SPSS version 25 was used for all quantitative analyses. Descriptive statistics were used to describe each item, including the mean and standard deviations. Participants were asked to evaluate whether the categorization and derivation of each element were appropriate on a 5-point Likert scale form 1 (very unfit) to 5 points (very fit). The content validity ratio (CVR) index was calculated by substituting the number into the CVR equation.

Table 1. Characteristics of the delphi panel members (n=10)

No.	Age	Experience	Affiliation	Field	Role	Position
Expert 1	53	29 years 9 months	University	Higher Education	Professor	Professor
Expert 2	35	10 years 2 months	Vocational training institution	HRD/corporate education	Head of organization/ CEO/Manager	Representative
Expert 3	47	15 years	University	Higher Education	Professor	Professor
Expert 4	56	31 years 9 months	University	Higher Education	Professor	Professor
Expert 5	47	20 years	University	Higher Education	Professor	Professor
Expert 6	47	22 years 7 months	Ministry of Employment and Labor	Occupational capacity policy	Public officer	General high-ranking Official
Expert 7	46	21 years 11 months	Vocational training institution	HRD/corporate education	Head of organization/ CEO/Manager	Executive director
Expert 8	52	23 years	Research institution	Occupational capacity development	Researcher	Senior researcher
Expert 9	25	4 years 11 months	Industrial enterprise	Corporation	Head of organization/ CEO/Manager	Representative
Expert 10	50	20 years	University	Virtual reality	Professor	Professor

The CVR index, proposed by Lawshe (1975), presents the minimum value based on the number of panel members; the content is judged to be valid for questions above the minimum value [14]. The CVR index was calculated using the following formula: the value was 1 when all participants respond that the factor is "fit" or "very fit," and the value is -1 when all participants respond that the factor is "unfit," or "very unfit." In other words, the more participants who responded that the relevant factor is valid, the closer the index is to 1. According to Ayre and Scally (2014), if the CVR value of each factor is .800 or more when there are 10 participants, the factor is considered valid at the .05 level [15].

$$CVR = \frac{n_e - (N/2)}{N/2}$$

Considering these assumptions, the following formula for the CVR was devised: "ne" is the number of panelists who responded "essential," and "N" refers to the total number of panelists. While the CVR is a direct linear transformation from the percentage of experts who rated the factor "essential," its utility derives from its characteristics [16]. With the researcher's consensus based on the analysis of the first result of Delphi evaluation, the factors with a CVR value of less than .800 were excluded. The initial components included in the first Delphi evaluation were added, deleted, or modified considering the experts' opinions on factors to be added or modified. The CVR index and further opinions were collected in the second Delphi evaluation, using the same procedure as the first evaluation. The final edutech-based lifelong vocational competency development training model was derived by adding, deleting, or revising the components in the same way as the first revision.

III. Results

A. Delphi Round 1

1) Basic Direction

The evaluation results for the validity of the basic direction of establishing an edutech-based vocational education and training model showed that the CVR values of Direction 1 (Learning Experience Platform Orientation) and Direction 2 (Realization of Adaptive Analytics) were acceptable due to CVR 1.00 (≧ .800). However, the CVR value of Direction 3 was 0.71. The reason the data did not meet the validity level seems to be that the topic of reinforcing human touch technology supporting instructors was too broad to make a judgment (Expert A). Also, Expert C indicated that "reinforcing human touch technology for learner support" was appropriate because in edutech, human touch technology is generally applied to support learners rather than instructors. Furthermore, an amendment "support for learners and instructors" was proposed from the perspective of revising Direction 3. The researchers also considered the opinions of Expert C by adding "providing a real sense of teaching and learning for learners, applying human touch technology to promote learners' motivation for learning and reinforcing their willingness to continue learning".

The CVR was 1 for the overall validity of the two basic directions of the project promotion, satisfying the fitness criteria (CVR ≧ .800). However, the CVR fit for direction 3 was not sufficient (see Table 2).

2) Key Contents of the Worker Training Program

The first evaluation of the validity of the organization of the worker training project showed that the CVR value of the non-face-to-face training and implementation plan was acceptable (CVR ≧ .800). However, the CVR values for the training method, teaching and learning model, and evaluation were all 0.71, which means that they failed to meet the criteria for validity.

The validity for the training method, teaching and learning models, and evaluation did not meet the criteria because the training method, the core elements were ambiguous in the "use at least one edutech technology" question. Thus, there was doubt about whether edutech was used. Moreover, from the perspective of the training institution, there were concerns about the dysfunction of applying technology indiscriminately without thinking about the training effect. In addition, it may not be specific to evaluate the type of use and the synergy effect among the core elements from the various edutech elements. The key concern was that when simple incentives are given, educational and

Table 2. Basic direction of edutech-based vocational education and training (n=10) (Round1)

Basic direction	Content	CVR*	Mean	SD**
Direction 1: Learning Experience Platform (LXP) Orientation	A learner-customized support platform designed to create a more personalized learning experience and help users find new learning opportunities. Recommends and delivers training programs by combining learning contents with various sources that are supported by AI.	1.00	4.70	0.50
Direction 2: Realization of Adaptive Analytics	Measures learners' understanding of specific topics to provide detailed feedback and provides learners with relevant digital resources as a follow-up measure. Provides an adaptive presentation of contents by diagnosing the learner's level of understanding reached by the learner for the topic selected. Uses computer AI algorithms that adjust training content to suit learners' learning styles and speeds. The algorithms detect patterns that are based on learners' responses to the content and prompts according to the learners' unique needs and abilities, real-time response through correction and arbitration. Innovates the learning experience for both learners and instructors by combining the adaptive learning platform with predictive analysis and other edutech applications.	1.00	4.60	0.50
Direction 3: Increasing the Effect of Human Touch Using Edutech	Instead of replacing the instructor's role, edutech starts with the recognition of partially replacing the comprehensive roles of instructors to smoothly operate a learner-centered adaptive education. The task of the instructor in face-to-face education is generally communicating the contents, facilitating the learning process (i.e., motivation and interaction), checking learning outcomes (i.e., formation evaluation and comprehensive evaluation), and additional education. Edutech is used to replace, supplement, expand, and create the instructor's role of motivating learning and producing effective learning outcomes. Accordingly, edutech should be supported as the optimal technology to help instructors by implementing the best advantages of face-to-face education in non-face-to-face situations.	0.71	4.00	1.30

Table 3. Evaluation of the validity of the worker training program (Round1)

Category	Content	CVR	Mean	SD
Format	Non-face-to-face training.	1.00	4.10	0.80
Training Method	Implementing a customized course using at least one key element of edutech (e.g., artificial intelligence, big data, immersive content/metaverse, cloud services, blockchain, IoT robots).	0.71	3.60	0.90
Teaching and Learning Model	Creating a teaching and learning model considering the characteristics of edutech. Applying the teaching and learning model is essential.	0.71	4.00	0.90
Evaluation	Evaluation and incentives are given according to the type of use and synergy effect between the core elements from various edutech elements.	0.71	3.40	1.00

training outcomes such as practical learner satisfaction or improvement of learning may not be properly implemented (see Table 3).

3) Training Organization Requirements

All CVR values for the three training organization requirements were at an acceptable level of 1.00 (CVR ≧ .800). Table 4 presents the evaluation of content validity of the training organization requirements. The requirement included one or more core skills in the curriculum, training course design, specified teaching, and learning design based on the characteristics of edutech core technology, and design considering the organic satisfaction of each interested party related to training, such as learners, instructors, training institutions (see Table 4).

4) Edutech Required for Each Training Course Design and Learning Stage

The panel of experts were asked to choose the edutech functions that they believed were required for each learning stage (see Table 5). In the Delphi survey preliminary work, through the researcher's opinions and the expert's

Table 4. Evaluation of content validity of training organization requirements (Round1)

Organization requirements	CVR	Mean	SD
Training course design including one or more core skills in the curriculum.	1.00	4.00	0.50
Specified teaching and learning design based on the characteristics of the edutech core technologies.	1.00	4.60	0.70
Design, considering the organic satisfaction of each interested party related to training, such as learners, instructors, training institutions	1.00	4.40	0.50

Table 5. Edutech evaluation required for each training course design and learning stage (Round1)

Edutech function	Before learning (Frequency)			Learning execution (Frequency)			Learning/ Evaluation (Frequency)		After learning (Frequency)
	Motivation and goal identification	Diagnosis	Recommendation	Learning	Encouraging participation	Promoting interaction	Formative evaluation	Summative evaluation	In-depth learning
Adaptive Learning Function	4	9	6	7	4	1	6	5	7
AI communication function support	6	4	4	2	6	7	5	2	3
Use and support of immersive content, gamification/IoT	2	2		9	6	7	5	6	6
Non face to face practice function support		3		9	2	4	6	6	6
Customized learning performance system support	5	4	4	5	8	5	6	5	6

verification, the main functions of edutech are derived as five items such as "Adaptive learning", "AI communication site", "Immersive content and gamification/IoT utilization", "Non-face-to-face practice", and "Customized learning performance system".

They evaluated the adaptive learning function the highest in the pre-learning stage (Frequency 9), followed by AI communication site function support (Frequency 6). In the learning stage, two functions scored high in the following order: non-face-to-face practice function system support during learning practice (Frequency 9) and adaptive learning (Frequency 7). The demand for customized learning performance system support scored high (Frequency 8) in terms of edutech for encouraging learning participation. In the formation evaluation, the adaptive learning function, non-face-to-face practice function, and customized learning performance system support were equivalent (Frequency 6). In the comprehensive evaluation stage, demand for immersive content and gamification/IoT utilization and support were equivalent (Frequency 6). The Adaptive Learning function (Frequency 7) scored high in terms of edutech for supporting in-depth learning after learning (see Table 5).

B. Delphi Round 2

After the first Delphi survey results were analyzed, the second survey was conducted to evaluate the content reflecting the results. The validity of some items, based on the experts' opinions, fell short of the criterion or was measured at the boundary of the criterion area in the first survey. However, we decided to maintain the criterion in the second round after discussion among the researchers. In addition, if detailed additional knowledge was required, brief inquiries and meetings were conducted with the experts to collect and evaluate their opinions concerning the research direction.

1) Basic Direction

Based on the second evaluation survey of the validity of the basic direction of the edutech-based vocational education and training model, the mean value increased overall compared to the first survey by reflecting the opinions of the panel experts in the first survey. Directions 1, 2, and 3 all had CVR values of 1.00. The CVR values of all the items in the second evaluation were acceptable (CVR ≧ .800). Table 6 presents the result of the second evaluation survey (see Table 6).

The experts suggested that two items should be added to the basic direction: (1) the creation of an infrastructure that can develop and activate a digital badge system and (2) a mastery-centered learning system or module for each task. The infrastructure is an important basic direction to create and develop customized lifelong vocational competency and

Table 6. Basic direction for edutech-based vocational education and training (Round2)

Basic orientation	Content	CVR	Mean at first round	Mean at second round
Direction 1: Learning Experience Platform orientation	Content: A learner-customized support platform designed to create a more personalized learning experience and help users find new learning opportunities by providing an LXP-Learning Experience platform) educational environment that can collect learning process data for efficient and effective education management. Focus: Recommends and delivers training programs by combining learning contents with various sources using artificial intelligence support.	1.00	4.70	4.70
Direction 2: Adaptive Learning with Learning Analytics	A link for Adaptive Analytics that can analyze data collected on the LXP platform. Measures learners' understanding of specific learning topics to provide detailed feedback and provides learners with relevant digital resources as a follow-up measure. Adaptive presentation of contents by diagnosing the level of understanding the learner has reached for the selected topic. Uses computer AI algorithms that adjust training content to suit learners' learning styles and speeds. The algorithms detect patterns based on learners' responses to the content and prompts them according to their unique needs and abilities, and real-time response through correction and arbitration. Innovates the learning experience for both learners and instructors by combining the adaptive learning platform with predictive analysis and other edutech applications. Creates a comprehensive customized education system including a customized encouragement and learning motivation, as well as content.	1.00	4.60	4.90
Direction 3: Increasing the effect of human touch using edutech	Edutech starts with the recognition of partially replacing the comprehensive roles of instructors to smoothly operate a learner-centered adaptive education instead of completely replacing the role of the instructor. Since learning a new field requires the more systematic involvement of instructors to replace the role of instructors who provide basic concepts, technical support is needed to reinforce human touch, which replaces face-to-face education where learners can talk, communicate, and learn with actual instructors. Reinforce human touch technology to increase the presence of instructors in a non-face-to-face learning environment, inspires learners' motivation to learn, and strengthens their willingness to continue learning. Facilitates, participation of students and creates a complete learning experience, which must be supported by the best technology that replaces, supplements, expands, and creates the role of instructors with an emphasis on the role of coaching. Systematic support to strengthen teachers' digital literacy.	1.00	4.00	4.90

thus promote business. To do so, it is important to support appropriate teaching and learning methods along with teacher support technology.

2) Key Contents of the Worker Training Program

Based on the results of the second evaluation of the items related to the validity of the composition of the worker training project, the CVR values of the non-face-to-face training type and implementation plan were both acceptable (CVR ≧ .800) (see Table 7). The teaching and learning model, evaluation, and implementation plan were all acceptable with a CVR of 1.00, except for the training method (0.80). The overall mean value also increased from the value in the first round.

3) Training Organization Requirements

All of the second evaluation. The items included the validity of training organization requirements, training course design (1.00) including one or more core skills within the curriculum, specified teaching and learning design (1.00) based on core technology characteristics, and the design considering the organic satisfaction of each stakeholder related to training including learners, instructors, and training institutions (1.00). The overall mean value also increased compared to the first round (see Table 8).

Other experts suggested that the core technology application model was still not clear in terms of terminology and meaning. They suggested that the technology overlapped and needed to be more specific in the core technology application model that the researchers had presented. The experts also proposed a method for distinguishing between the core technologies and application models and combining them to create a new model. In addition to the proposed core technology application model, they suggested an open model rather than a guide method to enhance creativity. These models needed to further be developed through core expert workshop in the commercialization stage where the teaching and learning model and edutech are combined and

Table 7. Evaluation of the validity of the worker training program (Round2)

Category	Content	CVR	Mean at first round	Mean at second round
Format	Non-face-to-face training	0.90	4.10	4.40
Training Method	Improves training effectiveness by implementing customized courses utilizing at least one key technology of edutech (core technology application model: artificial intelligence, big data, immersive content/metaverse, cloud services, block-chain, IoT robots).	0.80	3.60	3.70
	Create an essential teaching and learning model considering the characteristics of edutech and applying the teaching and learning model (combination of teaching and learning model and edutech).	1.00	4.00	5.50
Evaluation	Overview: Evaluation and incentives are given according to the type of use and synergy effect among core edutech elements.	1.00	3.40	4.30
	Evaluation indices: Training institution capabilities, edutech business promotion capabilities, training course organization and training outcomes (employment rate, improvement in learning, satisfaction) are included, and edutech business promotion capability is evaluated significantly by dividing them into: (1) adequacy of edutech application; and (2) adequacy of teaching and learning design based on edutech application.	1.00		4.30

Table 8. Evaluation of content validity of training organization requirements (Round2)

Organization requirements	CVR	Mean at first round	Mean at second round
Training course design including one or more core skills in the curriculum.	1.00	4.00	4.30
Specified teaching and learning design based on core technical characteristics.	1.00	4.60	4.90
Design considering the organic satisfaction of each interested party related to training, such as learners, instructors, and training institutions.	1.00	4.40	4.90

designed in earnest.

4) Edutech Required for Each Training Course Design and Learning Stage

The results of the second survey included the frequency of edutech selection that is required for each learning stage in the first survey results. The experts asked us to select one necessary edutech application model based on the priority demand from the first survey results. In terms of learning motivation and goals, the experts evaluated the functional support of artificial intelligence communication sites the highest (Frequency 7) for the pre-learning stage. In the learning stage, immersive content and gamification scored the highest during the learning performance (Frequency 5). Customized learning performance system support (Frequency 4) was high for the formation and

Table 9. Edutech evaluation required for each training course design and learning stage (Round 2)

Edutech function	Before learning (Frequency)			Learning execution (Frequency)			Learning/ Evaluation (Frequency)		After learning (Frequency)
	Motivation and goal identification	Diagnosis	Recommendation	Learning	Encouraging participation	Promoting interaction	Formative evaluation	Summative evaluation	In-depth learning
Adaptive Learning Function		6	7	3			2	2	6
AI communication function support	7	1	1		2	4	1		1
Use and support of immersive content, gamification/IoT	1			5	3	4	1	2	
Non face to face practice function support				1	1		1	2	1
Customized learning performance system support	1	2	2	1	4	1	4	3	1

comprehensive evaluation. The adaptive learning function (Frequency 6) was high in the post-learning stage. Table 9 presents the results of the required training course design and learning stages from the experts' perspectives.

IV. Discussion and Conclusion

The basic directions of the edutech-based vocational education training model explored in this study could be summarized as LXP orientation, realization of adaptive learning with learning analysis, and increasing the effect of human touch to support learners and instructors.

LXP orientation creates a designed learner-customized support platform for efficient and effective education management by providing an educational environment where learning process data can be collected to create a more personalized learning experience and help users find new learning opportunities.

Adaptive learning with learning analytics is presented as a link for adaptive analysis that can analyze the data collected on the LXP. The platform also presents the adaptive content by identifying the level of understanding of the topic chosen by the learner. It measures degree of understanding of learners on a particular learning topic and provides detailed feedback and relevant digital resources as a follow-up measure. The adaptive learning platform can be combined with predictive analysis and other edutech applications to innovate the learning experience of both learners and instructors.

Finally, increasing the effect of human touch using edutech to support learners and instructors aims to actively support the interaction between learners and instructors. It also further strengthens human touch technology to increase the presence of instructors in a non-face-to-face learning environment, promote learners' motivation, and strengthen their willingness to continue learning.

The edutech-based worker training program can increase the training effect by implementing a customized course utilizing one or more of edutech's core technologies. Core technologies include AI, big data, immersive content/ Metaverse, cloud services, block-chain, and IoT robots. It is also important to design a teaching and learning model combined with edutech by reflecting the characteristics of edutech. Finally, the entire edutech-based vocational training program should be designed to consider the organic satisfaction of each stakeholder including learners, instructors, vocational training institutions, and government agencies.

This research explored and developed a vocational education and training model to effectively implement edutech-based vocational competency development. The findings indicated that the basic directions of edutech-based vocational education and training are LXP orientation, realization of adaptive learning with learning analytics, and increasing the effect of human touch using edutech. Additionally, the examination of format, training method, teaching and learning model, and evaluation in this study affirmed the effectiveness of edutech-based training programs. The results highlighted the need for a teaching and learning method in training organization that utilizes at least one core technology of edutech, along with customized courses. Important factors in designing edutech-based vocational training programs for workers, include designing a curriculum that applies edutech for each learning stage, and combining teaching and learning designs that are suitable for the applied core technologies.

The experts who participated in the Delphi study all agreed in the importance and development potential of edutech in vocational training. The results of this study will help efficiently support edutech-based education and training projects that will rapidly increase in the future. Our findings lay out a blueprint for the direction and model of "edutech-based vocational education and training program", as a new paradigm for vocational training.

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