

***Reflections on Using a Monitoring System for Participating Students in Work-Based Learning (WBL) Aimed at Developing the Adversity Quotient (AQ) Through Cloud Computing Technology***

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**Abstract**

The aims of this research are 1) To study the level of Adversity Quotient (AQ) and the level of work behavior of students practicing in the Work-based Learning (WBL) of a college in Thailand and 2) To study the level of satisfaction in using the student monitoring system for practicing students in the work-based learning (WBL). The sample group the study consisted of 20 intern students and 20 interns from business establishments. The researcher used a test of Adversity Quotient (AQ), a student behavior assessment form. And satisfaction assessment form it is a tool for collecting data. The statistics used in data analysis include basic statistics, Percentage, Mean and Standard Deviation and t-test dependent. 1) The results of comparing the average scores before and after training found that the average scores of the adaptability and problem-solving skills test were higher after training than before training, with a score of  $143.05 > 125.50$ , and the average scores of the student work behavior test were higher after training than before training, with a score of  $109.10 > 76.15$ , which is statistically significant at the 0.01 level. And 2) the overall average satisfaction level is in the highest level of satisfaction ( $\bar{x}= 4.64$ ). The area with the highest level of satisfaction is the student tracking process, followed by the supervision from the advising teacher.

Keywords: Satisfaction, Work Behavior, Adversity Quotient (AQ), Work-Based Learning

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## **Introduction**

Society is undergoing rapid changes in the present, so it is necessary to train oneself to have abilities and skills in order to live a happy and successful life. Success depends only 20% on intelligence, while the rest is about social skills and emotional management. (Goleman, 1995) Therefore, current education aims to develop students in physical, mental, intellectual, and social aspects, emphasizing the importance of students having the ability to develop themselves according to their goals, resolve emotional conflicts, and adapt. In addition, there are four important goals for students to achieve success: 1) EQ (Emotional Quotient) - emotional intelligence, 2) IQ (Intelligent Quotient) - intellectual intelligence, 3) MQ (Moral Quotient) - morality, and 4) AQ (Adversity Quotient) - the ability to face and overcome challenges. (Stoltz, 2001) The Adversity Quotient (AQ) is the behavioral response to life's challenges, which can be developed through Stoltz's training. Stoltz believes that individuals who have the Adversity Quotient (AQ) can plan ahead, control themselves, persevere, and understand and utilize the abilities of others for their benefit (Stoltz, 1997).

Promoting students' Adversity Quotient (AQ), which requires development, is essential. The Adversity Quotient (AQ) leads to students' happiness and success in achieving their goals. This study conducted experiments with a sample group of students undergoing work-based learning (WBL) in the first year of their bachelor's degree program in Innovation Trade Management, at a college in Thailand. The research aims are as follows:

- 1.1 To study the level of students' Adversity Quotient (AQ) and their work performance behavior in the work-based learning. (WBL)
- 1.2 To study the level of satisfaction in using the student internship monitoring system in the work-based learning. (WBL)

## **Literature Review**

### **1. The Concept of Adversity Quotient (AQ)**

The Adversity Quotient (AQ) is crucial for people in the modern era, as it is a key factor that leads to success in life and work. AQ is a concept introduced by Stoltz (1997), who categorized individuals into three groups. The first group is "The Quitter," who avoids challenges and tends to lack vision, dislike risks, and have less motivation in their work. The second group is "The Camper," who seeks convenient ways to avoid facing new obstacles and chooses a simpler life when confronted with adversity. The third group is "The Climber," who possesses high resilience, does not give up easily, and often becomes good leaders.

Stoltz (1997) divided the components of the Adversity Quotient (AQ) into 4 dimensions, collectively known as CO2RE: 1) Control (C), 2) Origin and Ownership (O2), 3) Reach (R), and 4) Endurance (E).

The Adversity Response Profile (ARP) test by Stoltz (1997) measures one's Adversity Quotient (AQ). It also explains the meaning of different levels of adversity response and resilience, as follows.

Score	Meaning
166 - 200	There is a tendency to have great resilience to major obstacles and the ability to move forward. Can use AQ techniques to develop their own potential and that of others.
135 - 165	There is a tendency to work well and thrive in challenging situations and have the potential to develop oneself using AQ techniques.
95 - 134	Can work well and achieve success as long as there are no significant obstacles. Often carries accumulated concerns, which makes it difficult to face challenging tasks. However, can use AQ techniques to develop their potential.
60 - 94	Has low potential in work. Obstacles can lead to setbacks and it is difficult to move forward. Must contend with feelings of helplessness and hopelessness. Can overcome these by developing AQ.
0 - 59	There is a tendency to endure various forms of suffering and adversity. Can increase motivation, energy, health, happiness, vitality, and enjoyment. Results in job performance, perseverance, and hope, can be achieved by using AQ techniques.

Stolz (1997) proposed a technique for developing AQ called The LEAD Sequence, which consists of 1) L (Listen to your adversity response), 2) E (Explore all origins and your ownership of the result), 3) A (Analyze the evidence), and 4) D (Do Something).

## 2. The Concept of Online Training

Online training is a systematic approach to learning that utilizes technology as a medium for knowledge transfer in order to enhance and support learning, increase learning efficiency, and address limitations in terms of location and time (Pimpir, 2017). In addition, Angelo (1993, as cited in Vichuda, 1999) proposed five fundamental principles of online training management, which are: 1) promoting continuous communication between trainees and trainers, 2) supporting the development of collaboration among trainees, 3) encouraging trainees to seek knowledge independently as active learners, 4) providing immediate feedback to trainees to help them assess their own abilities, and 5) facilitating limitless learning opportunities for anyone interested (Angelo, 1993, as cited in Vichuda, 1999).

The online training program is a form of media that allows trainees to acquire knowledge on their own, similar to a self-learning module. Raphin (2006) mentioned the components of a self-learning module as follows: 1) having clear objectives, 2) identifying target groups, 3) having components of interconnected objectives, 4) providing instructions, content, activities, and assessments, and 5) having a manual that explains the methods and conditions of use, as well as the answer key.

The process of creating an online training program, proposed by Chaiyong (2008), consists of the following steps: Step 1: Content analysis, which involves categorizing the content into subunits. Step 2: Learning activity planning. Step 3: Production of supporting media for the activities. Step 4: Testing the effectiveness of the training program.

The learning management system for online training consists of 5 components. 1) the Course Management system, which considers 3 user groups: learners, instructors, and system administrators. 2) the Content Management system and tools for creating content. 3) the Test and Evaluation System, which includes a question bank, random question generation, timed exams, and automated grading, along with reports on scores and attendance. 4) the Course

Tools system, which includes various tools for communication between learners and instructors, as well as learners with each other, such as web boards and chatrooms, with the ability to store data history. 5) the Data Management system, which includes file and folder management. Instructors have their own storage space for lesson materials, as determined by the system administrator.

### **3. The Concept of Cloud Computing Technology**

The meaning of cloud computing technology, as stated by Danielson (2008) and Lin and Chen (2012), is as follows: It refers to the way computer users access and utilize services over the internet, where service providers share resources with users. This concept has evolved from the ideas and services of virtualization and web services. Users do not necessarily need technical knowledge of the underlying workings of these services.

The types of cloud computing technology, as categorized by Johnston (2009), can be divided into three formats: 1) Public Cloud or External Cloud, 2) Private Cloud or Internal Cloud, and 3) Hybrid Cloud. In addition, Mell and Grance (2011) have classified the service models of cloud computing into three formats: 1) Software as a Service (SaaS), 2) Platform as a Service (PaaS), and 3) Infrastructure as a Service (IaaS).

For types of software on cloud computing technology, Arron (2017) has classified tools into 4 categories as follows: 1) File Storage tools, 2) File Synchronization tools, 3) Document Creation tools, and 4) Collaboration tools.

The aforementioned concept has been divided into three components by the researchers, which are 1) users, 2) the process of monitoring and caring for students, and 3) cloud computing technology. The student monitoring and care system is built on a Hybrid Cloud network, utilizing Software as a Service (SaaS) cloud services, and is connected to the Google Workspace for Education learning support toolset.

### **4. The Theory Related to Satisfaction**

"Satisfaction" refers to the state of emotions and shared experiences that individuals have towards the effectiveness and success of activities that lead to a predetermined goal. In another sense, satisfaction is a feeling in terms of evaluation that is an important component of learning, which relates to the performance outcomes of individual learning experiences (Namluea, 2015; Morse, 1958; Good, 1973; Wolman, 1973; Davis, 1981; Vroom, 1990; Newstrom and Davis, 2002).

The method of evaluating satisfaction is to assess the value of feelings in terms of satisfaction and dissatisfaction, in terms of magnitude. There are three aspects to assessing satisfaction: 1) emotional aspect, 2) cognitive aspect, and 3) behavioral aspect. It is a measurement of readiness to act or respond to the causes of behavior.

## **Methodology**

### **1. Population and Sample Group**

The sample group used in this research consists of 1) 20 internship students and 2) training teachers from the workplace. The selection method for the sample group is purposive

sampling, which means selecting from the workplaces where the volunteer internship students are currently practicing.

## **2. Research Tools**

- 3.2.1 Work-Based Learning (WBL) for Monitoring and Supporting Student Internships in the Learning-Work Integration System.
- 3.2.2 Development Plan for Enhancing Adversity Quotient (AQ) through Cloud Computing Technology.
- 3.2.3 Assessment of Students' Resilience and Adversity Quotient (AQ) during their Internship.
- 3.2.4 Evaluation of Students' Work Performance and Behavior during their Internship.
- 3.2.5 Satisfaction Survey for Students on the Work-Based Learning (WBL), which aims to enhance their resilience and Adversity Quotient (AQ) through cloud computing technology. This evaluation form consists of a 5-point rating scale.

## **3. Data Collection**

This research is a single-group experimental design that measures the level of Adversity Quotient (AQ), as well as the work performance behavior of students, before and after the experiment (The One-Group Pre-test, Post-test Design). The duration of the experiment is 8 weeks in order to study the Adversity Quotient (AQ), as well as the work performance behavior of students. As follows:

Step 1: Have the sample group participate in an 8-week trial of the Student Practice and Professional Development (SP<sup>4</sup>D) tracking system. The system consists of 3 components:

- Component 1: INPUT, which includes the following users: 1) Faculty Advisors: They are responsible for managing content, activity rooms, and data of both faculty and students. They track and manage interaction data, exchange opinions between students and faculty advisors, as well as among students. They work together to follow the SP<sup>4</sup>D Model's tracking and supervision process. 2) Students: They are responsible for recording data, taking tests, and participating in activities to develop their skills and overcome obstacles according to the SP<sup>4</sup>D Model's tracking and supervision process.
- Component 2: PROCESS, of the SP<sup>4</sup>D Model 6 includes the following steps: 1) Introduction and screening, 2) Goal setting and planning, 3) Student support and development, 4) Prevention and correction, 5) Referral for problem-solving, and 6) Data collection and summarization.
- Component 3: OUTPUT, consists of Google Classroom/Meet for organizing activities, Google Forms for conducting tests, and Google Drive for storing student data, as shown in Figure 1.

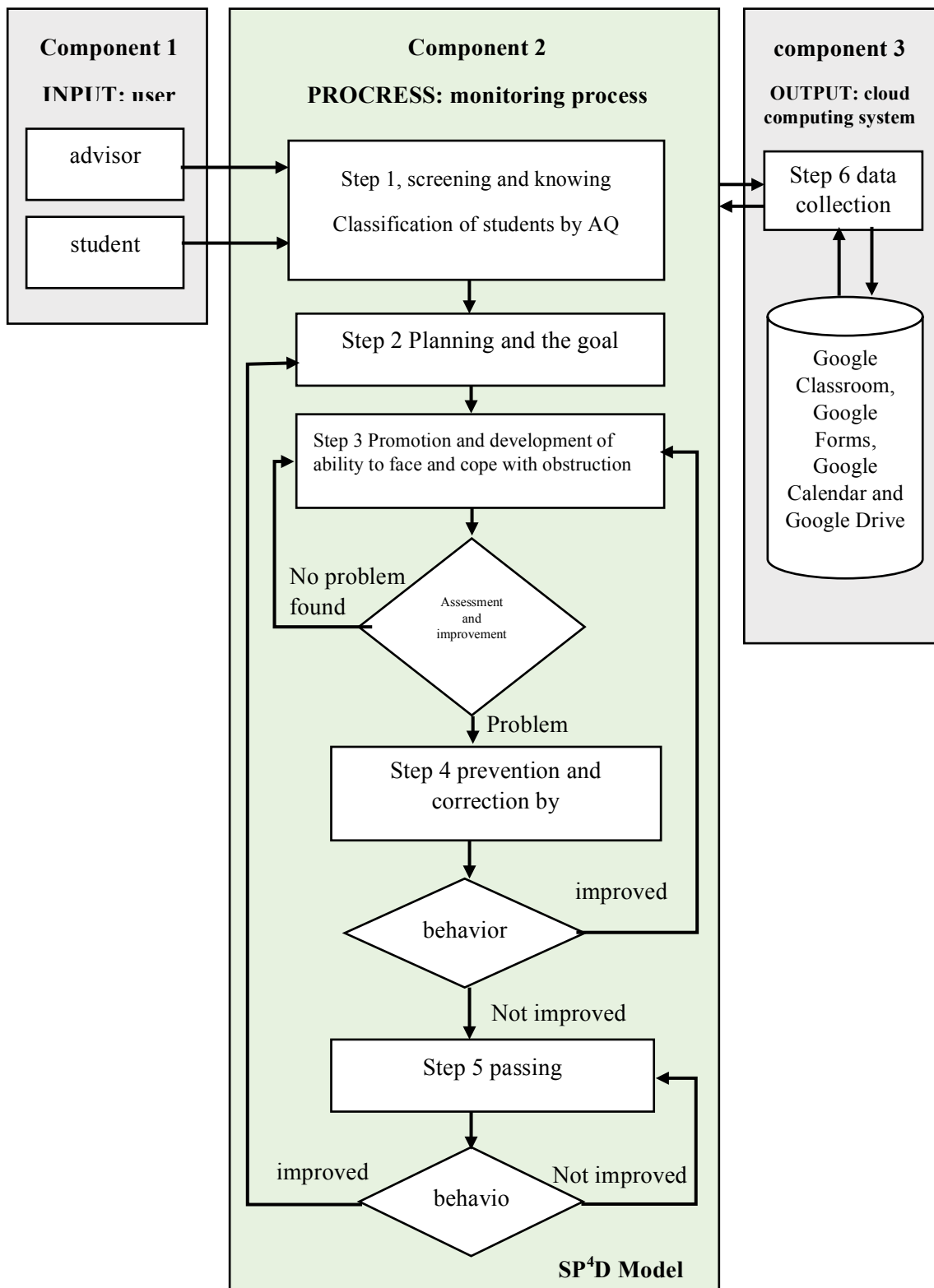


Figure 1: A system for tracking and supervising students' work-based learning, in conjunction with their academic studies, to enhance their Adversity Quotient (AQ) through cloud computing technology.

Along with the internship students, participate in activities to develop skills in Adversity Quotient (AQ) through cloud computing technology. This can be explained from the example of an activity plan as follows:

Activity Plan for Developing Skills in Adversity Quotient (AQ) through Cloud Computing Technology:

Unit Activity 1: Introduction and Screening, with the following steps:

- 1) Students complete the activity "Who are you" through Google Form.
- 2) Students check their own scores to determine which personality group they belong to.
- 3) Use Google Slide to explain various personality traits.
- 4) Divide the students into small discussion groups according to their personality traits.
- 5) Each group of students completes the activity "Paths of Life" through Google Jamboard.
- 6) Students brainstorm and identify individuals they have encountered during their internship, and determine which component of the tree of life they represent, along with explaining the reasons and posing the question "How can the tree of life be nurtured and cared for to grow well?" This activity illustrates different roles, demonstrates the interconnectedness, and highlights the necessary skills.
- 7) Summarize the activities.

Step 2: Evaluate the students' Adversity Quotient (AQ) during their internship. Here are some examples of assessment questions.

**1. Your coworker does not listen to your opinions or suggestions?**

The reason why my colleague does not listen to my opinions or suggestions is because...

I can't control or manage. 

1	2	3	4	5
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 I can control or manage.

**C-**

The reason why my colleague refuses to accept my opinion or proposal actually comes from...

Myself 

1	2	3	4	5
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 Other people or other factors

**OR-**

**2. What if there is no response to your proposal at the meeting?**

The reason why no one accepts my proposal is because...

Myself 

1	2	3	4	5
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 The situation at that time.

**R-**

The reason why no one accepts my proposal is...

Always happened to me 

1	2	3	4	5
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 It will never happen to me again

**E-**

Step 3: weeks 4 and 8, deliver the student work behavior assessment form, version 1, to the company's training supervisor, a total of 20 sets. Explain the purpose of sending the assessment form, to request cooperation in data collection.

Step 4: conduct interviews and have the sample group complete the satisfaction assessment form regarding the student internship monitoring system, a total of 20 sets.

#### 4. The Statistics Used for Data Analysis

Statistics in analyzing the level of abilities to Adversity Quotient (AQ), as well as the level of abilities and work behavior of students before and after the experiment using dependent t-test statistics, and analyzing based on the satisfaction of students towards the student internship tracking system using basic statistics such as percentage, mean, standard deviation, and interview findings.

### Results

#### 1. The Level of an Adversity Quotient (AQ) and the Level of Work Performance Behavior of Interns

The results of the comparison of average scores in the test measuring the level of Adversity Quotient (AQ) are presented in Table 1, and the results of the comparison of average scores measuring the level of performance in student internships are presented in Table 2.

(n=20)

level	Full score	$\bar{x}$	S.D.	t-test	Df	Sig.
Pre-training	200	125.50	15.35	6.90	19.00	0.00**
Post-training	200	143.05	8.26			

\*\* Statistically significant at the level of .01

Table 1: The results of comparing average scores (means) measuring the level of Adversity Quotient. (AQ)

According to Table 1, the results of comparing the average scores of the Adversity Quotient. (AQ) of students before and after practical training showed that the level of Adversity Quotient. (AQ) after training is significantly higher than before training at a statistically significant level of .01 ( $\bar{x}_2 = 143.05$ , S.D. = 8.26), ( $\bar{x}_1 = 125.50$ , S.D. = 15.35).

(n=20)

level	Full score	$\bar{x}$	S.D.	Df	t-test	Sig.
pre-training	120	76.15	33.29	19.00	27.12	0.00**
post-training	120	109.10	81.88			

\*\* Statistically significant at the level of .01

Table 2: The results of mean scores measuring the performance level of intern students in the Work-based Learning. (WBL)

According to Table 2, the average score of students' work behavior before and after training was compared. The average score after training ( $\bar{x}_2 = 109.10$ , S.D. = 81.88) was significantly higher than before training ( $\bar{x}_1 = 76.15$ , S.D. = 33.29) with a statistical significance of .01.



## 2. The Result of Satisfaction Levels in Using the Student Internship Monitoring System

The satisfaction of students undergoing work-based learning (WBL) in the learning and working system, coupled with cloud computing technology, is shown in Table 3.

Issues/Topics for consideration	$\bar{x}$	S.D.	Satisfaction level
Issue 1: Supervision from supervisory teachers.	4.57	0.50	The most
Issue 2: Student monitoring process	4.66	0.48	The most
Issue 3: Development activities AQ	4.48	0.60	The most
Issue 4: Cloud computing technology	4.23	0.73	The most
<b>Total average</b>	<b>4.64</b>	<b>0.53</b>	The most

Table 3: The level of satisfaction of the intern students towards the WBL monitoring system to develop the Adversity Quotient. (AQ) through cloud computing technology

From Table 3, the satisfaction level of internship students towards the student tracking system was found to be the highest overall ( $\bar{x} = 4.64$ , S.D. = 0.53). When considering the individual aspects of satisfaction, the highest level of satisfaction was found in the aspect of student tracking and monitoring processes ( $\bar{x} = 4.66$ , S.D. = 0.48). Following that, in descending order, were the aspects of supervision from advisors, AQ development activities, and finally, cloud computing technology.

The feedback reflects the feelings about the activities and the use of the student internship monitoring system from the student interviews.

It is a good idea for this type of technology system. It is a comprehensive system that can help with problem tracking and student monitoring conveniently. Tracking through technology without difficulty and notifying in advance so that we can stay informed all the time, making us feel like there is a teacher taking care of us and providing assistance throughout. Impressed with the 3 steps of AQ development process, it helps us understand ourselves and others' personalities, which can be applied to work or to understand each customer's personality and how to handle it.

Another person said:

The teacher pays great attention to details and takes good care. It is a good tracking system that is easy to understand and not overly complicated, allowing students to understand clearly, especially the development of AQ that is suitable for work and has AQ measurement.

Another comment is:

I feel good because there is a teacher who always provides advice and thoughts. The teacher cares about following up with students during internships, making us feel close to the teacher and there is advance notification for appointments to solve problems, which allows us to prepare in advance. We receive systematic problem-

solving and have the opportunity to practice problem-solving on our own. It is very beneficial.

## **Discussion**

1) The results of the study on the level of Adversity Quotient. (AQ) and the level of work behavior of Work-based Learning (WBL) students found that the average scores of Adversity Quotient. (AQ) and the work behavior were higher after training compared to before training.

This may be due to the Work-based Learning (WBL), which involves a process where 1) individual students are identified and screened through online training activities, 2) goals and objectives are planned and established, 3) advisors help promote and develop students, 4) assistance is provided in identifying and solving problems, 5) systematic solutions are implemented for persistent issues, 6) data is collected and summarized, and continuous support is provided to students. However, a study by Thitinada and Yuwadee (2019) found that there were problems with the student tracking and support system, such as the lack of a process and operational steps, advisors lacking technical skills and knowledge in the system, and a lack of continuity. Therefore, advisors need to have a good understanding of the student tracking and support system, as well as engage in continuous development and collaborative work (Awutai, 2013). Additionally, Nattarin (2014) studied the management module of the student support system in a school under the Royal Patronage, which consists of four components: student data system, operational student support system, support services, and problem prevention and solving. The core of the student tracking and support system is control and coordination, effective communication, which can help reduce obstacles and challenges (Awutai, 2013).

2) The results of the study on satisfaction levels in using the student internship monitoring system found that the overall satisfaction level is the highest. This may be because the study follows a systematic process, examines the current situation, identifies problems, and analyzes and integrates appropriate tools. As a result, the evaluation of the monitoring process aligns with Kittisak et al. (2015), who found issues in supervision and monitoring, as well as the need for guidance and systematic monitoring of students, especially by teachers and educational institutions. It is recommended to establish a systematic and continuous monitoring system that includes tracking progress and promotes teacher knowledge and understanding of activities, leading to more practical implementation (Nanthawat, 2022). Furthermore, when considering the findings, the highest satisfaction level is "being able to apply the knowledge gained from participating in activities in daily life," followed by "being able to apply the knowledge gained from participating in activities in work." This may be due to the internship monitoring system, which includes online training activities that enhance students' abilities to face and overcome challenges through cloud computing technology. Some interesting points include:

- The process of developing and promoting the Adversity Quotient (AQ) using The LEAD Sequence technique by Stoltz (1997) focuses on training listening and perception skills to respond to problem-solving challenges. It involves researching the root cause of obstacles, analyzing the possibilities for solving them, and enhancing one's own capabilities. Choosing a method and taking action to eliminate obstacles can help control their impact on life. This is consistent with Jinda (2013) study on training methods to enhance the Adversity Quotient. (AQ) in early childhood education. It can

stimulate the growth of the Adversity Quotient. (AQ) within individuals and students become aware of the importance of training that directly influences their mental development to foster the Adversity Quotient (AQ).

- The steps for organizing online training activities result in students gaining hands-on experience from participating in activities and continuously evaluating themselves, enabling them to learn independently. They can engage in knowledge exchange, thoughts, experiences, and problem analysis that are of interest to them. There are techniques to promote team understanding and problem analysis together, making students feel capable, accepted, and valued, leading to their ability to ultimately solve problems. Activities foster collaboration, constant communication, even if students do not encounter problems and obstacles. According to Garg and Singh (2022), they studied the online training format in India and found that online training is an effective tool for transferring knowledge. It allows learning according to the abilities and potential of the trainees, as well as the necessity of using information technology.
- The selection of suitable cloud computing technology enables trainees to easily access and use data anytime, anywhere (Bindu, 2016). This helps reduce the burden of data storage and ensures relevance to keep up with changes, leading to the creation of knowledge that can be applied in future caregiver development by consulting teachers (Krittinicha, 2021)

As mentioned above, it demonstrates the alignment of the student internship monitoring system, which includes the steps of monitoring and activities to promote and develop students' Adversity Quotient (AQ).

## **Conclusion**

The Work-based Learning (WBL) tracks and supports students' internships in conjunction with their learning process. It promotes students' readiness for practical work experience and equips them with information, media, and technology skills. It enhances both their personal and professional lives by integrating real-world professional experiences with classroom learning. This allows students to become familiar with the realities of the working world before completing their education. Learning in a professional setting is widely recognized as a means to develop students in various aspects beyond traditional classroom learning. Therefore, if educational institutions have a system in place to closely monitor and support students during their studies and internships, while also developing activities to enhance their Adversity Quotient (AQ), it would be of great benefit to students when they encounter challenges in their internships, studies, and daily lives. This ultimately results in equipping students with problem-solving skills, enabling them to overcome obstacles in the end.

## References

- Arron, F. (2017). 7 Different Types of Cloud Computing Structures. Retrieved on July 17, 2020. <https://www.uniprint.net/en/7-types-cloud-computing-structures/>
- Awyachai, S. (2013). Development of a management and support system for helping students in schools under the supervision of the Office of Primary Education Area. *Journal of Educational Sciences*, Naresuan University, 2013, 15(4), Oct-Dec 56.
- Bindu, C. N. (2016). Impact of ICT on teaching and learning: a literature review. *Int. J. Manag. Comm. Innovations* 4, 24–31.
- Chaiyong, P. (2008). *Educational Innovation*. Bangkok: Thammasat Publishing.
- Danielson, L. M. (2008). Making Reflective Practice More Concrete through Reflective Decision Making. *The Educational Forum*, 72(129-137).
- Davis, F. B. (1981). *Education Measurement and Their Interpretation*. California: Wadsworth.
- Garg R., & Singh A. P. (2022). Were the online training courses imparted to consultants in the COVID era really effective? *Interdisciplinary Journal of Virtual Learning in Medical Sciences*, 13(1), 66-67.
- Goleman, D. (1995). *Emotional intelligence*. Bantam Books, Inc.
- Good, C. V. (1973). *Dictionary of Education*. (3rd ed). New York: McGraw-Hill Book.
- Jinda, N. (2013). Development of training models to enhance students' abilities in facing challenges in teaching practice in early childhood education. Bachelor of Education, Srinakharinwirot University.
- Johnston, S. (2009). Cloud Computing Types: Public Cloud, Hybrid Cloud, Private Cloud. Retrieved 19 March 2019 [http://www.circleid.com/posts/print/20090306\\_cloud\\_computing\\_types\\_public\\_hybrid\\_private/](http://www.circleid.com/posts/print/20090306_cloud_computing_types_public_hybrid_private/)
- Kittisak S., Jintanawat P., & Phongthorn S. (2015). Basic Patterns of School Support System Management. *Journal of Administration and Development*, Mahasarakham University, 7(1), 109-124.
- Krittinicha, P. (2021). Developing a Model of Supportive Care System for Students in Wat Chantararam School (Direct Mind 5), Focusing on the Competencies of Class Teachers. Doctoral Dissertation in Educational Administration, Faculty of Education, Christian University.
- Laddawan Kasetnet & Kra. (2004). Developing primary school students' public spirit: A long-term study. *Conference Proceedings*. Institute of Behavioral Sciences Research, Srinakharinwirot University.

- Lin A., & Chen N. C. (2012). Cloud computing as an innovation: Perception, attitude, and adoption. *International Journal of Information Management*, 32, 533-540.  
doi:10.1016/j.ijinfomgt.2012.04.001
- Malika, T. (2001). *Organizational Behavior*. Bangkok: X-Bernet.
- Mell P., & Grance T., (2011). The NIST definition of cloud computing. *Communications of the ACM*. 6(53), 50
- Methaya, K. (2003). *Some Personality Traits Related to the Ability to Face and Overcome Challenges*. Master's Thesis (Educational Psychology). Mahasarakham: Graduate School, Mahasarakham University.
- Mohd E., Ewan M. M., Ahmad Z. K. & Nordin A. R. (2015), The Influence of AQ on the Academic Achievement among Malaysian Polytechnic Students. *International Education Studies*; 8(6). 69-74.
- Morse, M. C. (1958). *Satisfaction in the White Job*. Michigan: University of Michigan Press.
- Namlin, T. (2019). *Satisfaction of service recipients towards the service provided by personnel in the Faculty of Architecture*. Rajamangala University of Technology Thanyaburi.
- Nantawat, N. (2022). *Risk factors affecting delinquency in children and adolescents*. National Conference on Academic Research, 2nd Edition. Research and Development Institute, Kamphaeng Phet Rajabhat University.
- Nattarin, J. (2014). *Module for managing student support systems in schools under the patronage of His Majesty the King*. Philosophy of Doctor of Education, Faculty of Education, Silpakorn University.
- Newstrom, J. W., & Davis, K. (2002). *Human Behavior at Work: Organizational Behavior*. (8th ed.). New York: McGraw-Hill
- Pender, N.J. (1987). *Health Promotion in Nursing Practice*. Appleton Century-Crofts. Norwalk.
- Pimphirai, S. (2017). *Development of online training with an open learning management system for the general public in the field of infographic design*. Department of Educational Technology, Faculty of Education, Silpakorn University.
- Prisana, W. (1992). *Educational Psychology*. Bangkok: United Production.
- Raphin, P. (2006). *Development of learning activities*. Uttaradit: Faculty of Education, Rajabhat University Uttaradit.
- Sansanee C. & Usa C. (2002). *Training the brain to think critically*. 2nd edition. Bangkok: Watthanaphanit Samransat.

- Stoltz, P. G. (1997). *Adversity Quotient Turning Obstacles into Opportunities*. New York: John Wiley & Sons.
- Sucha, J. (1998). *Psychology in everyday life*. Bangkok: Thaiwattanaphanit.
- Sukhothai Thammathirat Open University. (2013). *Development of instruments for measuring personality and interpersonal skills*. Nonthaburi: Sukhothai Thammathirat Open University.
- Surang, K. (2008). *Educational Psychology*. 7th edition. Bangkok: Chulalongkorn University.
- Suthida, P. (2012). *Enhancing resilience in Thai university students to face challenges*. Chulalongkorn University: M.P.A.
- Thepphanom M., & Sawing S. (1996). *Organizational Behavior*. Bangkok: Thai Watthanaphanit.
- Tittinada, S. (2019). *Development of student support systems using the PDCA cycle: A case study of Wat Pa Teng Huay Yab School, Ban Thi District, Lamphun Province*. Master's Thesis, Faculty of Education, Chiang Mai Rajabhat University.
- Vichchuda, H. (2002). *Teaching materials for industrial relations management*. Bangkok: Suan Sunandha Rajabhat Institute.
- Vichchuda, R. (1999). *Online teaching and learning: A new option for Thai educational technology*. *Journal of Education, Chulalongkorn University*, 27(3), 29-33.
- Vroom, V. H. (1990). *Manage people not personnel: Motivation and performance appraisal*. Boston: Harvard Business School Press.
- Wahyu H., Wahyudin., & Sufyani P. (2018). *The Mathematical Argumentation Ability And Adversity Quotient (AQ) Of Pre-Service Mathematics Teacher*. *Journal on Mathematics Education*. 9(2), 239-248.
- Wolman, T. E. (1973). *Education and Organizational Leadership in Elementary Schools*. New Jersey: Prentice-Hall.
- Yuwadi, P. (2011). *Development of a support system for helping students in Chaiyachumphonchana War Veterans Kindergarten School under the supervision of the Office of Primary Education Area, Kanjanaburi District 1*. In a thesis for the degree of Master of Education, Faculty of Education, Chulalongkorn University.