

DESIGNING SIMULATION FOR ASSESSING PEOPLE SKILLS AND COMPETENCIES OF SCHOOL LEADERS IN THAILAND

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Abstract

The purposes of this study were to design and develop a simulation for assessing People Skills and Competencies (PSCs) of school leaders in Thailand. The research approach used in this study was Research and Development (R&D). The first part was to find out what were the key management competencies and skills for Thai school leaders. The second part aimed to identify the themes and content of simulation by discovering the priority needs of PSCs used by school leaders in managing stakeholders as part of their educational administration tasks. The third part was focused on the development of a computer-based-simulation program (CBSP) to assess the PSCs of school leader. The sample size for this study was 346 from a population of 2,537 secondary school directors under Office of the Basic Education Commission (OBEC), Thailand. The research instrument used in this study was a five-point Likert scale questionnaire. The research finding showed that in the first part, “people skills and competencies” was the highest rated competency group for Thai school leaders. The finding for second part was that the simulation theme and content was related to “self & social awareness” of school administrators in managing “local/community representatives” when working on “curriculum development” tasks. Thirdly, the design and development of CBSP for assessing PSCs of school administrators was based on the five steps of a simulation development framework. The prototype’s content and branching stories consisted of five actors, three decision trigger scenes, and four choices in each scene. Thus, the accumulated branching alternatives in the simulation program were 420 choices totally.

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INTRODUCTION

Over the past several decades, competencies have been introduced and implemented in both the private and government sector in Thailand for leadership development purposes. It was believed that good leaders should have a specific set of competencies and skills. Thus, in order to advance his/her career to a higher stage, the leader should demonstrate the behavior related to the required leadership competencies in the organization.

In some organizations, defining their own competency model to align with their ambitions, vision, and strategies has been determined as a tough process, particularly the implementation stage. However, when it came to the assessing and developing stage, the leaders or managers, human resources staff, and employees then realize that these stages are far more difficult than what they could imagine at the beginning of the process. This is not because they did not plan their work well nor did they lack knowledge and understanding of the competency model, but the ways to assess some competencies and real understanding of assessment approaches are key issues. In medical healthcare, the tools for assessment competencies vary based on

the stages and levels of content (Levine, DeMaria Jr, Schwartz, & Sim, 2013).

For an educational system, having the right people, development, directions, strategies, and the right implementation approaches can further build a nation's bench-strengths in terms of its human resources and this can result in increasing the wealth of the country in terms of people resources in the final analysis (UNESCO, 2004). From a number of studies, the school leadership of principals and assistant principals played a critical role in creating a huge impact on improving outcomes for schools and students (Marzano, 2005). Therefore, there is no questions about why we should invest more on transforming school leaders. To build the best individual development program, there is no one absolute approach to transform school leaders but it can be done through different ways to meet each individual's needs and to achieve the desirable outcomes (Fullan, 2014). As one may need to develop such skills that are not currently relevant to today's context but may become a required literacy in the future.

In Thailand, there is a competency model for selecting and developing school leaders (school directors and vice-directors). The model was aligned with development models from the Office of the Civil Service Commission (OCSC), especially in the area of the core competencies. On the other hand, the selection process of school leaders has been based on announcements from the Office of the Teacher Civil Service and Educational Personnel Commission (OTEPC), effective since 1 January 2012. There are two main categories for promotion criteria: 1) work experience & background, and 2) paper & pencil test results. The required competencies

will be assessed by a paper & pencil test (OTEPC, 2012).

The paper & pencil test (P&P test) is not really the best way to assess competencies. It is suitable for measuring the cognitive domain such as IQ and academic capabilities (McClelland, 1960). The P&P Test is cheap, easy, quick, and reliable. It can be standardized among candidates. It is strong for measuring knowledge and understanding but not for actual performance or demonstrated behavior (Brickell, 1978).

In 2011, the National Research Council conducted a workshop for “*Assessing 21st Century Skills*” to identify competencies and skills of future school leaders. It was found that the PSCs named in their study “Interpersonal skills” included complex communication skills, social skills, team-work, cultural sensitivity, and dealing with diversity. All of these were critical skills for success as a school leader. The study addressed some issues of using purely cognitive tests for assessing interpersonal skills that people with high IQ tend to know what the right thing to answer, but it is doubtful if they will demonstrate such behaviors once the situation requires real practical mastery of the skill. Another issue was the process used to observe individual behavior and judgment as it may be biased and lack reliability. The interpersonal skills require some sort of interaction with other people. Therefore, since people are different, it is very difficult to standardize and make a single conclusion. Interpersonal skills require various sorts of competences that derive from experience, instinct, and learning about specific social contexts. By conclusion, the study highlighted technologically sophisticated assessments such as a computer simulation that may be the

solution to elicit emotional responses from the people under prescribed circumstances and to assess people’s self-regulatory capacities and other so-called soft skills (Koenig, 2011).

Thus, for assessing school leader’s management competencies and skills such as interpersonal skills, social skills, people skills, and teamwork, a sophisticated tool such as a computer simulation, a virtual environment, or a situational judgement test may be required; therefore, this has become an interesting topic for this current research. Moreover, the themes and theories for developing the simulation’s branching story, storyboard, conversation dialog, sets, and characters are also fundamental steps to be identified prior to the simulation design stages.

OBJECTIVES

There are three objectives:

1. To identify management competencies and skills for assessing in a simulation.
2. To identify the themes for developing simulation content.
3. To develop a prototype of a computer-based-simulation program (CBSP).

CONCEPTUAL FRAMEWORK

The concept of assessing people skills and competencies of school leaders and the simulation development prototype have been created based on the studies of :

1) *The analysis and synthesis of people skills of school leaders*—There were three elements of people skills and competencies; Self & Social Awareness, Collaboration and Teamwork, and Ability to adjust own style and relationship building.

2) *DISC Personality Theory* (Marston, 1928 and Straw, 2002)—There were four primary types of personality; D = Dominance, I = Influence, S = Supportiveness, and C = Conscientiousness.

3) *School Stakeholders*—There were six key stakeholders: Vice-School Director, Teacher, Student, Parents, Local Community, and Supervisor.

4) *School Administration Tasks* (National Education Act 1999, 2002, 2010)—There were four areas of school tasks: Academic Management, Financial Management, Human Resources Management, and General Administration.

5) *Competencies Assessment*—There were four stages of competency assessment based on the Miller Pyramid (Miller 1990 and Reinert, 2013): KNOWS, KNOWS HOW, SHOWS HOW, DOES

6) *The model of Simulation Development*—There were five stages (Aldrich, 2003, David & Sande, 2008 and Hunter, 2013): Start with an idea, Build branching stories, Build the rules, Build the prototype, and Test and Iterate.

Study Approaches

This study used a Research and Development approach which consisted of three main stages. However, in this article, only R1D1 (Designing and Developing a Prototype) will be presented. The findings for R2D2 (Validating the prototype by experts and adjusting it) and R3D3 (Prototype testing and adjustment) will be presented in a separated article.

R1D1: (Designing and Developing a Prototype)

1. Literature review on management competencies and skills of school leader, simulation development, and competencies assessment of school leaders.
2. Identify current and desired states and priority needs of people skills and competencies used by school leaders in managing stakeholders.
3. Select a simulation's theme and content from the highest priority needs.
4. Develop a First Simulation Prototype.

Population and samplings

Population: 2,537 Secondary School Directors under the Office of Basic Education (OBEC).

Samplings: 346 Public Secondary School Directors under the Office of Basic Education (OBEC) by using a simple random sampling.

Data analysis

Statistics methods used: descriptive analysis, frequency distribution (f) percentage (%), mean (\bar{x}), standard deviation (S.D.), and PNI_{modified} (Suwimol, 2005).

Research Findings

Management Competencies for Thai school leaders:

In this article, the management competencies and skills of school leader have been reviewed and synthesized from experts and institutes in Thailand and other countries around the world. The result of the review was

that the people skills and competencies cluster was the highest rated competency group for school leaders (Valesky, 2008; Florida Department of Education (2008); (New York State Education Department, 2008); (National Association of Elementary School Principals, 2012); (KIPP Foundation, 2009); (Ontario Ministry of Education, 2007), (Commonwealth of Pennsylvania, 2002); Marsh, 2000; Eichinger and Lombardo (2003); Spencer & Spencer, 1993; Hay Group, 2003; Boyatzis, 1982; Risser, 1998; The Office of the Teacher Civil Service and Educational Personnel Commission, 2012; Chuanpit, 2009; Surawut, 2007; Pachamon, 2004; Chaipong, 2005; Payao, 2010; Gua, 2004; Napadech & Boonmee, 2010). When more in-depth analysis was conducted on the elements of the people skills and competencies cluster, the results were that 1. Self & Social Awareness (PNI = 0.1779), 2. Collaboration & Teamwork (PNI = 0.1770), and 3. Ability to Adjust Own Style and Relationship Building (PNI = 0.1562) were the most critical elements of people skills and competencies. Therefore, based on the study, self & social awareness was the key element of people skills and competencies for school leaders in Thailand.

The purpose of using the jargon “Skills and Competencies” in this study is to prevent any unnecessary argument about the terminology as to whether a skill is part of a competency or not. From the study, some experts concluded that interpersonal and social skills were part of people/ human interaction competency while others did not agree with it. They named social skills, interpersonal skills, human skills, and some others competencies related to people interaction as equivalent to people and human

competencies. In this article, both terms (skill and competency) were treated the same. There was no intention to invite any further discussion on them.

Themes for developing simulation content:

The theme for developing the simulation content was based on the results from the research. The collected data from questionnaires was analyzed by using frequency distribution, percentage, mean, standard deviation, and PNI_{modified}. The research findings were that: 1) the highest priority need of people skills and competencies used by school leaders was on 1.1) the school task: “Academic Management” (PNI_{modified} = 0.1929) 1.2) sub-task: “Curriculum Development” (PNI_{modified} = 0.2040), and 1.3) the school stakeholder: “Local/ Community Representatives” (PNI_{modified} = 0.3055). Thus, the simulation content designed in this research was the situation where a newly appointed school director needs to use their own people skills to manage community leaders (Chief Executive of the Subdistrict Administrative Organization) to provide support for a local curriculum development program (Ecotourism Program) so that the children and local labor could have skills for assisting the ecotourism agenda. In addition, the results from the research demonstrated in Figure 1 show all scenarios of the simulation content. There were a total of 114 alternatives, and the highest priority need among those 114 choices was selected for developing a simulation prototype.

As shown in Figure 1, Academic Management had the highest PNI score while its sub-tasks, namely Curriculum Development, Measurement and Evaluation, and Teaching and Learning, were ranked with

the highest PNI scores, significantly above all other school sub-tasks. (PNI score: 0.2040, 0.1858 and 0.1855) For school stakeholders, it was found that the community representative category was the highest ranked area that the school leaders need to use their people skills to manage. These findings aligned well with other research results from Natthaphong (2011), Somkid (2007), Nunnaphat (2003), and Nipa (1999) that curriculum development is very important for school administrators to develop students based on local demands. School should adjust school curriculums by applying the local context to the national curriculum. Chaiwat (2002) pointed out that

the problem was from the lack of good collaboration among internal and external stakeholders. Nakorn (2014) also added that most of school achievement is from the participation of people in the local community. However, the key difficulty in getting the local community to participate in school curriculum development was that the local community lacked understanding about their roles and expectations. The problem is primarily caused by the lack of information, lack of communication, and lack of appropriate guidance from school officials.

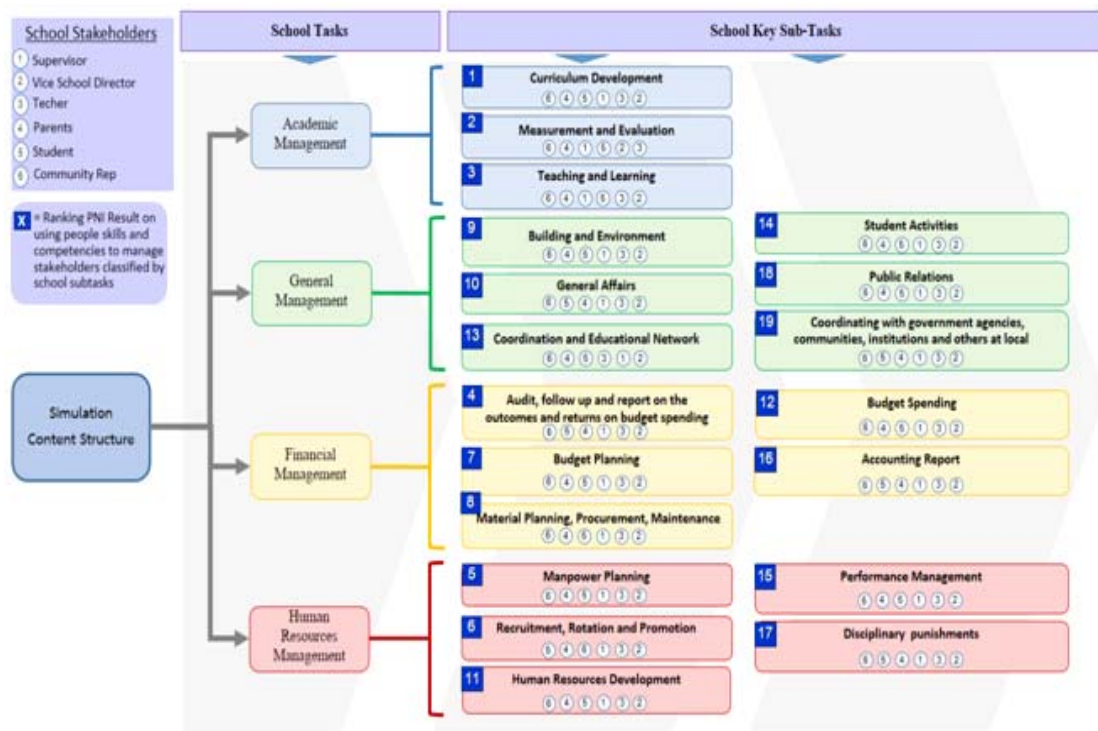


Figure 1: Priority needs for developing simulation content on PSCs used by school leaders in Thailand

Theory for supporting the simulation design:

Developing a simulation was not simply a matter of using individual judgements and experiences to rationalize the story lines, but also included branching stories and conversation dialogs. It required much effort in identifying the right theories and concepts to support them. In this research, people skills and competencies was selected as the target elements for assessment. Based on the three critical elements defined earlier: self & social awareness; collaboration & teamwork; ability to adjust own style and relationship building, the theory, which was found to be most appropriate to support the elements and theme, was the DISC Personality Theory (Marston, 1928; Straw, 2002). The theory, concept and tools of DISC personality have been widely used by the Office of the Civil Service Commission (OCSC) for its leadership development program since 2009. In this theory, there were four main types of personality: D = Dominance, I = Influence, S = Supportiveness, and C = Conscientiousness. There can be a combination of types, but the main type will dominate to control individual personality. In Figure 2, the 4 quadrants model of DISC is introduced. The X axis identifies the continuum of opposites that range between High Assertiveness (use their own intuition and then act fast) and Low Assertiveness (use gathered information to analyze things and then act slowly). The Y axis represents the continuum of opposites that range between High Expressiveness (Open to listen or share their own mind) and Low Expressiveness (Control their own thoughts and use facts and logic over feelings)



Figure 2: DISC Personality Four Quadrants Model

Source: Synthesized from Wards (2012), Straw (2002), Extended DISC and DISC Profile by Inscape

The DISC theory has rationalized the conversation dialogs in all alternatives of each trigger or decision point. The players need to select the most appropriate choice to match the situation and the actors'/actresses' characters or personalities. Figure 3 demonstrates the design of branching stories based on four choices of DISC personality. The player needs to read the actor's personality type in order to choose the right choice in responding to his or her specific character. In this case, alternative A.1 represented the response based on a D personality type while alternative A.2, A.3 and A.4 represented personality types I, S, and C respectively.

Framework for Skills and Competencies Assessment:

Once the story's theme and the theory have been selected, the next steps in crafting the simulation were based on the five steps of simulation development as proposed by Hunter (2013), Aldrich (2004), and David &

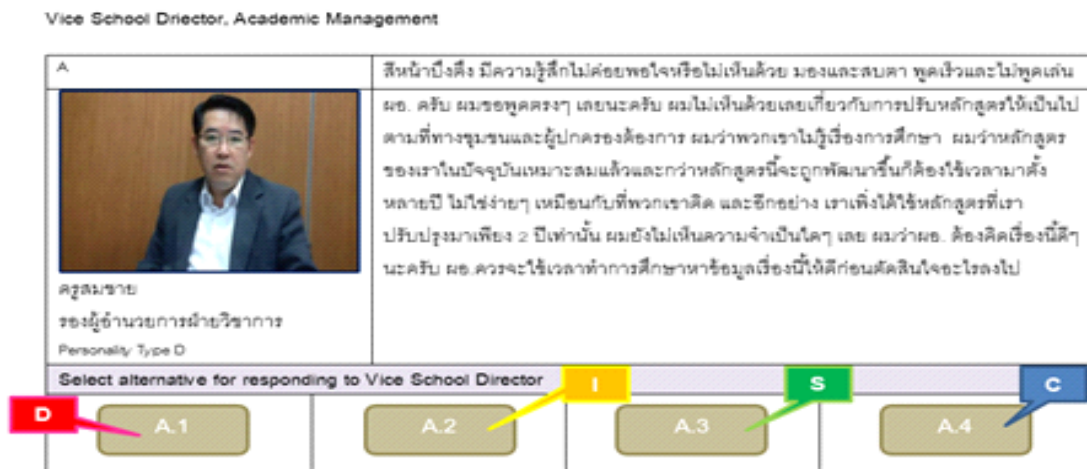


Figure 3: Branching Stories and Conversation Dialog based on DISC Theory

Sande (2006) which will be explained in the next finding. Before jumping into the simulation development, another key finding on how to assess skills and competencies must be evaluated. Since one of the purposes of developing a CBSP was to assess skills and competencies, the model or framework for assessing them, therefore, should be addressed. For soft-skills and competencies, there was no framework to explain how to assess them in general. The framework that can be used to guide soft-skills and competency assessment in a CBSP was borrowed from those in medical education. The Miller's Pyramid of Assessment, developed by George E. Miller (Miller 1990 and Reinert 2013), has been a popular model for assessing skills and competencies of medical students. In Figure 4, the four level of assessment in Miller's assessment framework are shown. The KNOWS and KNOWS HOW are measures of the cognitive domain, whereas SHOWS HOW and DOES imply assessment of real behavior.



Figure 4: Miller's Pyramid of Assessment Framework (Reinert, 2013)

The CBSP, developed in this study, aimed for level 1 to 3 (KNOWS to SHOWS HOW). In level 1, the player enters into the first gate of simulation by finishing a cognitive test of 28 questions. The test determines the level of knowledge and understanding of the player in the area of people skills and competencies based on the DISC theory. Once the first part is completed, the player enters into a simulation gate where lots of information is provided. In part two, the player enters into a simulation story by meeting with all the characters. The

player needs to interact with the actors based on pre-defined conversation dialogs. In this stage, the test is focusing on level 2 and perhaps the beginning of level 3 were measured in the simulation.

Developing a prototype of computer-based-simulation program (CBSP)

The computer simulation was developed based on the model of simulation development created by Hunter (2013), Aldrich (2004), and David & Sande (2006) which consisted of:

1. Start with an idea: It is the first stage of developing a simulation. The key is to define the goal and objective of what we want to do in simulation. Some people may have their own idea on what to do in a simulation but they may not know how to do it. Other people may not be clear about problem, solution, or the idea. Some problems and ideas that one thought the simulation was the answer to may need other forms of solutions instead of the simulation (Hunter, 2013). Starting with the idea is critical but we need to answer these questions to clarify what to do in the simulation. 1) Were the ideas important enough for you and others, why? 2) Did the ideas need simulations as an answer, why? In this study, the answer to these questions were arrived at through objectives 1 and 2. Once the goal has been defined, the next step is to develop a story, rules, and simulation design.

2. Build Branching Stories: Building branching stories is one of the approaches in creating computer simulations. This approach tends to be a better solution for the content related to behaviors training or assessment. It is about creating scenarios in responding to

the decision made by the player (Hunter, 2013). Another key element of building branching stories is that the researcher or developer should not develop more than three alternatives for each decision. Having more options seems like a good thing but it requires unexpected efforts in developing the decision tree to allow for more options. The outcome is exponential. For example: in this research, there were 4 alternatives for each decision point to match with the types of people skills, based on the DISC personality theory. Therefore, the total alternatives in this research grew totally to 420 options. This required tons of effort and validation during the branching stories building and adjustment stage.

3. Build the rules: Building the rules is also critical. The rules will tell the program developer on how to design and build the CBSP. There are many ways to develop a simulation's content. Some of them are: 1) *Linear Content* is the form which is popular for most of simulations and games. There is a single starting point and all players can see it at the beginning. Once the simulation starts, the player is required to make decisions at each decision making point or in other words at key "triggers". The triggers can take players on a different path or level of the simulation. Meaning that the player will see a different response or character or conversation dialog from the actors/actresses depending on the option that they choose at each trigger point. 2) *Open-Ended Content* is another form that requires players to make a decision, but in this type of content, there is no pre-defined path. The system will capture what responses the player makes during the simulation and finally evaluate the results at the end. The open-ended content type is popular for strategies

games or building up environment games. (Aldrich, 2004)

In general, the rules detail what the players can or cannot do in the simulation. For designing the rules, researchers should keep in mind that the simulation needs to be simple and user-friendly for players who have little knowledge about computers or technology. For example: 1) there is a rule to not allow a player to change his/her mind after hitting the confirmation button. 2) Time limitation/running out will put pressure and force the player to make a decision. The rules can be changed at any time during the simulation development stage, therefore the researcher should not try to completely finish all the rules and manuals before starting to develop the program. Instead, the researcher should adjust the rules along the way as the program is developed.

4. Build the prototype: The researcher or developer should not spend more time trying to build a great graphical design at the beginning. The most important thing for the prototype is to get the whole idea into something that can be touched and tested. There could be a number of changes during the development of the prototype. The researcher should concentrate on the program structure and flow instead of making it look nice at the beginning. The keys for prototype development are: 1) Making the content in the simulation clear and complete and aligned to the objectives. 2) Making the rules in the simulation readily understood by the players. 3) Making the “Starting Point” and the “End Point” in the simulation clear and concise so that the players know “where to start” and “where to finish.”

5. Test and iterate: At the end, the simulation requires evaluation as to whether the program is working well based on the objectives. Following Hunter (2013), the three steps in this stage are:

5.1 Testing the environment set up: No matter what the type of simulation is, whether paper, manual, computer, a virtual simulation, the testing is still a key activity to perform. One of key activities in testing is to prepare the environment for testing. To prepare the testing environment, the researcher should be focusing on two parts. One is about the physical preparation such as location, room, equipment, light, noise, temperature, technology and so on. The researcher should put some effort into ensuring all the physical preparation has been completed to mimic a real environment. Another part is regarding the player’s knowledge and skills. If the simulation requires some technical knowledge and skills of the participant, the preparation of a simulation manual is required or a pre-simulation briefing should be conducted prior to the testing session.

5.2 Testing and gathering feedback: In testing and gathering feedback, there should be no or few assistances provided during the simulation testing. The player should read the manual and try to complete the simulation as much as possible. If possible, the testing process should be able to record detailed logging of all player choices and actions so that the results can be evaluated at the end. (David & Sande, 2006). Open-end feedback questions in the form of a questionnaire are also important for obtaining additional comments from the players.

5.3 Apply feedback to the new iterate: Once the feedback has been gathered, the researcher should review all comments and feedback from both the questionnaire and system logging. The analysis should be conducted carefully based on facts and observations. The feedback for improvement that alignment with the simulation objectives and concept will need to be captured for further simulation improvement. The improvements sometimes are not about the simulation system itself, but rather about the processes and/or descriptions of the system.

Based on the five stages of the simulation development model, there are some additional findings that could be addressed for people skills and competencies simulation development. Thus, in this article, a new model for developing simulation on PSCs for school leaders is introduced in Figure 5. There are three main stages of simulation development: Pre-production Stage, Production Stage, and Evaluation Stage. In

each stage, there are key activities and tasks which are as follows:

1. Pre-Production Stage: This stage can be described as a preparation stage in which all prerequisite activities need to be completed in advance. It is a very time-consuming and complicated. The key activities in this stage are:

1.1. Discovering the idea: In this activity, the idea and theme for developing the simulation content must be defined. The theme should have a significant impact on school leader PSCs and be a common issue or problem for day-to-day school administration. The approach used in this study to find the theme was through PNI_{modified}. Moreover, it is as important as finding the theme to search and apply the right principle or theory so that during the story design and planning, all branching stories and their alternatives are managed based on a good mix between theoretical and practical context. In short, the idea should be able to answer questions such as ‘Why are

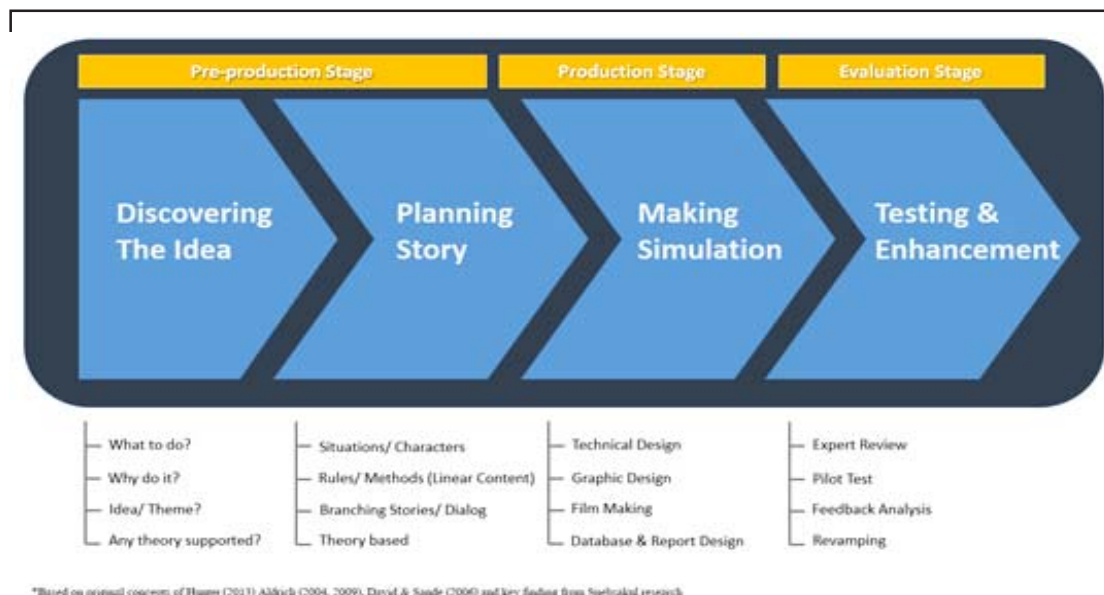


Figure 5: The Model of Simulation Development on PSCs for school leaders

we doing it?’ ‘What impact from what we do to the school leader’s PSCs?’ ‘What happen if we don’t do it?’ ‘What are the theories/principle supported?’ and so on.

1.2. Planning story: Planning and designing the simulation details were the key tasks in this activity. The sub-activities such as defining simulation rules, branching stories, characters, conversation dialog, theory-matching templates, and technical structure design all will take more time. Therefore, the researcher should consult experts for assistance.

2. Production Stage: This stage is the most critical one. It is the stage of “making the simulation” happen and that the simulation must be based on the theme, plan, and design defined earlier. In general, the researcher should have a basic understanding of program development such as program logics, program design workflow, database, output, and reporting. Thus, the critical points in this stage were as follows:

2.1. Technical design: Designing computer simulation requires some expertise and experience in programing or coding. It is very important that the researcher has knowledge and skills related to computer software development or otherwise, he should have in addition to the programmers, a technical consultant as well. The consultant should be able to advise on the computer software design and development. Since designing and building the computer simulation cannot be perfectly completed in only one short period of time, it requires a number of discussions and adjustments along the way until the end of the testing and piloting stage. Therefore, hiring experienced programmers who have a business mind-set (understanding people skills and a leadership development context) and

who are flexible enough to adjust the work to the requirements, would be a perfect solution. In this part, the program logics and workflow must be initially identified. The program developer and designer need to be clear on the logics and flows so that the amount of change and re-work can be minimized.

2.2. Graphic design: Beside the complexity of the technical design, it is also important for the researcher to realize that in developing a computer simulation, graphic design is also a key of success. It makes players believe and enjoy the simulation. Unfortunately, graphic design is a separate part and the programmers are normally not keen on it. The researcher may need to bring the programmer and graphic designer into the discussion so that they understand the requirements and can be working in the same direction.

2.3. Database and report design: The aims of computer simulations are normally to have an output for analysis and a report for further discussion or improvement. Therefore, having the right information in place is the key in responding to the goal. The researchers should be clear on what information they want from the simulation including the reason why they need it. Once the information has been identified, the programmer can then design the database for capturing it. Remember, if there is no information in the database, no report can be generated.

2.4. Filming or shooting: Shooting the simulation story does not seem to be a difficult part for today’s hi-technology end-user. Using a mobile phone to make a short film can take only a few minutes to complete. However, the tough part is not about making it. The most difficult part in shooting a simulation story is about having a good conversation dialog and professional actors/actresses. Both of them will

make the outcome of the shooting look real. The players will believe in the story and because of the actor's/actresses' appearance, voice and tone, facial expressions, and so on. The response from the players who believe in the simulation will be more real and closer to how they would react in real-life situations. Thus, having a professional film writer and actors/actresses will make a simulation close to perfect

3. Evaluation Stage: This stage consists of the testing, trying out and improvement. It is to test whether the simulation can be used for school leaders in assessing PSCs. In this stage, the evaluation can be divided in to three key activities:

3.1. Expert Review: In this research, there were two groups of experts who reviewed and suggested changes. The first group were experts in the area of people skills. The experts reviewed the simulation's conversation dialogs, characters, and the voices and tones of the actors/actresses. Another group of experts reviewed the simulation's story and context. As the situations were about school leadership, the context, therefore, was developed based on the findings from "Pre-Production Stage". Thus, the experts who reviewed the simulation were those who had experience in school administration. In addition, both groups were required to give feedback on the system, such as time-response, system flow, duration, look and feel, and so on. At the end of this activity, the comments and feedback from the experts were captured and analyzed. Some of the suggestions/ comments were brought in to adjust the simulation.

3.2. Pilot Test: Once the simulation was adjusted based on the expert

recommendations, the next step was to get the computer-based simulation program (CBSP) to be tested by the potential users. In this research, nine secondary school vice-directors, under the Office of the Basic Education Commission (OBEC), were selected to help provide feedback on the system especially in terms of user-friendliness, system-flow, language, video, and the system's user manual.

3.3. Feedback Analysis: In this activity, the feedback collected from pilot test was analyzed. Not all comments and feedback were used for adjustment. The researcher or content designer must understand the rationale of why and how the dialog originated. Therefore, they could reject some feedback which become invalidated based on the theories or simulation's objectives. For example: there were comments about the Thai cultural context that Thai people, especially in school administration, would never show direct behavior such as "Aggressive" or "Drive" High-D personality (from DISC) to their boss. After a careful consideration, the simulation content was maintained and was not adjusted with the reason that the design was based on the theory and intentionally assigned such characters to see what the responses from the players looked like.

3.4. Revamping: Overall comments and feedback in both the positive and negative categories have been recorded for future analysis and adjustment. This includes potential changes in simulation technology in the future that may be too expensive for today's development, but in the future may be affordable and able to enhance the realism of the simulation. If there are some valid recommendations for changes that could not be included today, the researcher should write

a summary with a rationale for potential future research and development.

A Prototype of Computer computer-based-simulation program (CBSP)

After completing all the steps and crafting the model for future development of a CBSP, a sample of the prototype, therefore, will be presented as follows:

Stage 1: A player is required to log onto the system with their name and last-name. (Figure 6) The system will capture the information and create a folder for recording all scores and responses in it.

Stage 2: A player must complete 28 questions in the first part of the CBSP for measuring his/her knowledge and understanding of people skills (how to manage people using different styles). This part will answer the level 1 (KNOWS) at the bottom of Miller's Pyramid of Assessment Framework (Reinert, 2013) Figure 7 demonstrates the page for a player to select and confirm his/her choices to the system.

Stage 3: A player enters into the simulation's main page. The information will be presented with time pressure. A player is required to read all the key information to determine how to respond to each character. There are four folders in the table. (Figure 8) The player can read them or skip some unwanted information. Each folder will provide different types of information about the school, economy, current situation, expectations from parents, characteristics of school vice-directors, and characteristics of local community leaders.

Stage 4: Once a player has completed reading all folders, he or she as a newly appointed school director will lead a school management meeting. (Figure 9) A player will have ten

minutes to talk with each school vice-director (Academic, Finance, Human Resources, and General Administration). The conversation dialogs and responses were designed based on the selected theme and personality theory.

Stage 5: The players will see a video of a vice-school director who reflects the different character and personality characteristics from the DISC personality theory. (Figure 10) The appearance, voice and tone of each character will be different based upon his or her personality. The player is required to select a response to what he/she thinks the most appropriate response is to that particular situation and character. Each choice is designed based on the personality responding type. The player can hear the voice and tone of each alternative. Once selected, the CBSP will lead the player to another scenario in which the response of the school vice-director will vary based on the player's earlier choice. After completing all the conversations with school vice-directors, the player will have another meeting with a community leader to discuss the school curriculum development to seek support from the local community.

Stage 6: The player will complete the CBSP assessment after all meetings have been finished. The system will record all choices that player made with each character. The system administrator can extract the data to conduct analysis and evaluation at the end of the test. The report at the prototype stage can be done manually by the system administrator. There could be more development on auto-generated reports once the requirements and system are stabilized.



Figure 6: CBSP Log on page

CONCLUSIONS

This study has focused on two main objectives: 1) identify the themes for developing simulation content and 3) develop a prototype of a computer-based-simulation program (CBSP)

1) The results of management competencies and skills for assessing school leader in the simulation has been done through a literature review and questionnaire to school directors in selected Secondary Schools under the Office of Basic Education (OBEC). The results were analyzed by using PNI_{modified}. It was found that the elements under people skills and competencies (PSCs); Self & Social Awareness (PNI = 0.1779), 2. Collaboration & Teamwork (PNI = 0.1770), and 3. Ability to Adjust Own Style and Relationship Building (PNI = 0.1562) were the most common skills and competencies used in school administration. The most critical element in PSCs for school leaders in managing stakeholders was “Self & Social Awareness.” This element is the most fundamental for emotional intelligence. People need to be aware of their own feelings, emotions, and personalities. They need to be able to observe and understand other’s feelings, emotions, and personalities as well. (Goleman, Boyatzis, and McKee (2001).

2) The themes for developing simulation content have been prioritized based on the PNI scores. The highest priority need of people skills and competencies used by school leaders was on 1) the school task: “Academic Management” (PNI_{modified} = 0.1929) 2) sub-task: “Curriculum Development” (PNI_{modified} = 0.2040), and 3) the school stakeholder: “Local/ Community Representatives” (PNI_{modified} = 0.3055) Thus, the simulation



Figure 7: Assessing Level 1 (KNOWS)



Figure 8: Assessing Level 2-3 (KNOWS HOW and SHOWS HOW): School Information in 4 folders



Figure 9: Assessing Level 2-3 (KNOWS HOW and SHOWS HOW): School Management Meeting



Figure 10: Assessing Level 2-3 (KNOWS HOW and SHOWS HOW): Individual Conversation Dialog

story was developed based on the highest PNI.

3) The development of a CBSP prototype was done in four parts. The first part was based on the theory to support the content in the simulation. It was found that the DISC personality theory was the most appropriate concept to rationalize people skills and competencies. Second was the framework for the skills and competencies assessment. The framework was based on The Miller's Pyramid of Assessment, developed by George E. Miller (Miller 1990 and Reinert 2013). There were four levels of assessment; KNOWS, KNOWS HOW, SHOWS HOW and DOES. Third was the model of simulation development. The model was based on concepts from Hunter (2013), Aldrich (2004), and David & Sande (2006). There were five stages in this model: start with an idea, build branching stories, build the rules, build the prototype, and test and iterate. Another finding in this study was a proposal called The Model of Simulation Development on PSCs for School Leaders. Lastly, the prototype of a CBSP demonstrated the draft of computer simulation for expert reviews and pilot testing in the next steps in the research

The study provides some pictures for educational authorities to see a different view of assessing school leader's skills and competencies. It did not mean to oppose the criteria and tools for the assessment of school leaders used today. The current approaches should be continued, as they have value, and some new approaches should be added to assess different skills and competencies that could not be properly detected in the past.

For school leadership assessment and development in Thailand, the CBSP can be

applied as one of the instruments for the Office of the Basic Education Commission (OBEC) and The National Institute for Development of Teachers, Faculty Staffs and Educational Personnel (NIDTEP) to select, promote, and develop their human resources. This tool can provide some information related to people skills and competencies of the school leaders so that they can be developed based on job expectations and requirements. Besides, the information can be used by OBEC for assigning candidates to match with the school needs. The result of this study can be used to develop more sophisticated CBSPs for assessing and developing future school leaders in Thailand. As new technology to support simulation continues to change and improve rapidly, the resulting simulations will become more and more realistic and useful. Today, new technologies, such as Virtual Environment, Virtual Reality, Highly Interactive Virtual Environment, 3Ds, Virtual Games, have all been introduced and applied in various types of simulations. The cost of investment in those technologies are still very high; therefore, their use is currently limited to medical school, the sciences, air-flight training, and the military, where training for life-and-death situations makes the initial investment worth the cost. (Aldrich, 2009) For educational transformation, the future scenarios that influence education in all societies have resulted from the globalization. (Hallinger, 2001) Thus, it is a hope that the prototype in this study will encourage Thai scholars or officials to see the benefits and put more attention and investment into this new way of assessing and developing school leaders in Thailand.

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