CHAPTER 2

LITERATURE REVIEW

There are several literatures that relate to improving high school students' Internet use. They are following these.

2.1 Risk behavior and Internet use of adolescents
- 2.1.1 Fundamental changes of adolescents
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2.1 Risk behavior and Internet use of adolescents

2.1.1 Fundamental changes of adolescents

Adolescents mean young people who are in time of dramatic change because they are developing from children to young adults (Brinthaupt and Richard 2002, 1-7). Obviously, adolescents have three aspects of change such as cognitive, social, and physical change. The changes influence later development.

- The cognitive change as more advance thinking includes the ability to think abstractly and the ability to think resonably about hypothetical situations.

- Adolescents can engage the environment and create knowledge, and understand the world.
- The social change presents to greater independence from family, increasing peer relation, learning about social and group conformity, and cross-gender friendships and cultivating initial romantic relations.
- The physical change comprises hormonal change affecting body characteristics; sexual maturity; body change affecting to weight and height; brain transforming and neural mechanisms influencing novelty and sensation seeking, and emotional reactions and responding to stress.

There are some theories that identify stages of human development. They point out a stage that involves adolescent change as shown in Table 2.1.

Table 2.1 Stages involving adolescent development (Concluded from Lerner, 2002: 42-49 ; Rathus, 2006: 476-477, 518-519, 528-529, 546-547)

Theory	**Author**	**Focus**	**Stage**	**Attributions**
Psychosexual development	Freud 1964	Development of physical need	Genital	- Sexual maturity - Sexual drive - Modeling himself or herself after his father or her mother
Psychosocial development	Erickson 1968	Role of society for development	Identity vs. identity diffusion	- Identity crisis (a turning point where one examines ones' values and makes decisions about life roles) - Experiment with difference roles, values, beliefs, and relationships - Joining in groups, imitating peers

Table 2.1 Stages involving adolescent development (Concluded from Lerner, 2002: 42-49 ; Rathus, 2006: 476-477, 518-519, 528-529, 546-547) (Continued)

Theory	Author	Focus	Stage	Attributions
Cognitive development	Piaget 1950	Intellectual capability	Formal operations	- Cognitive maturity - Dealing with the abstract and the hypothetical and the capacity to engage in deductive reasoning
The development of moral reasoning	Kohlberg 1963	Moral development in cognitive and behavior aspects	Postconventional level	- Contractual legalistic moral reasoning - Conscience and principle orientation - Person's own moral standards

2.1.2 Risk behavior of adolescents

During adolescence, changes of young people in term of cognitive, social and physical lead to adaptive directions and maladaptive pathways that refer to their development and risk behavior. Their development and risk behavior impact on their later life. To compare with children and adults, adolescents take more risks (Steinberg, 2004). In Thailand, adolescents' risk behaviors include unintentional injury of riding, violence, depression, substance abuse, sexual behavior and learning problems (Ruangkanchanasetr et al., 2005). Moreover, adolescents' risk behavior can occur on the Internet like cyberbullies, displaying sexual behavior, and displaying risk behavior that delivers negative outcomes to them (Moreno & Zimmerman, 2009). Adolescents can

use the Internet to act aggressive to other online people. They may also disclose their sexual behavior that lead to hazards from sexual predators.

They are many studies to understand reasons of adolescents' risk behavior. From literature review, there are two groups of reasons. First, risk behavior of adolescents can be occurred by their immaturity of neural mechanisms. During adolescence, brain transforming and neural mechanisms affect to novelty and sensation seeking, and emotional reactions. Adolescents have a less capacity for self-regulation (Steinberg, 2007). They are sensitive to social and emotional stimuli. Second, an ecological system that includes contextual factors impact to adolescents' risk behaviors (Holmbeck and Kendall, 2002). From a study of Jonson-Reid (1998), adolescents' risk behaviors can happen with multilevel ecosystem such as microsystem, mesosystem, and exosystem level that refers to a level from direct to indirect factors in nature. The microsystem is the closet environment of adolescents like home environment. It may involve with socioeconomic status (SES) and family relationship. The mesosystem refers to adolescents' community, school, and peers. The exosystem implies to indirect factors like media, war, and culture.

Furthermore, adolescents' risk behavior relate to their leisure time use. Adolescents can spend their free time during school, after school, on weekend, and during school break to involve in various activities. Students' leisure time may take risks without teachers' or caregivers' concern. At the present, adolescents as digital natives have a choice to spend their leisure time using the Internet (Prensky, 2001). They may also show risk behaviors on the Internet.

They are many studies focusing on reduction of students' risk behavior. The studies proposed interventions to alter knowledge, attitudes, or beliefs (Steinberg, 2004) and controlling an environment that influences on adolescents' risk behavior (Holmbeck & Kendall, 2002).

The interventions concerns activities that can provide positive outcomes or adaptive directions and prevent negative outcomes or risk behaviors. The activities can be designed to develop and adjust adolescents' self that relates to adolescents' life purpose. The self includes adolescents' feeling and life objectives like self-esteem (Brinthaupt &

Lipka, 2002 : 1-21). Adolescents can develop and revise their self-views and self-definitions. Interventions can be conducted in early adolescence to prevent early negative outcomes. Early adolescents are also forming their self that create an opportunity for interventions.

Controlling an environment concerns policies that affect to adolescents' environmental context. This leads to reduce adolescents' risk behaviors. Policies may relate to adult and the institutions that are adolescents' environment (Forster et al., 2007). For example, restrictions of adolescents' cigarette access can focus on applying penalties to businesses that sell cigarettes to adolescents and increasing the prices of cigarettes. This perspective leads to design environmental changes with goal of preventing adolescents' risk behaviors.

2.1.3 The Internet use of adolescents

The Internet can be the context that influences adolescent development. It delivers an arena of social development to adolescents. As well, it supports information for health and knowledge development. Adolescents can use the Internet for connecting with peers. This is the most popular use by adolescents (Subrahmanyam and Greenfield, 2008). They can also use the Internet to learn about sex education, health behavior, health treatment, school work and other issues. Therefore, there were studies about adolescent development in the arena of the Internet like identity and self, sexuality, health behaviors, leadership and academic achievement (Greenfield and Yan, 2006).

- Adolescence is the period when a person constructs an identity of the self or the ego. The construction of identity can occur on the environment of the Internet. The construction involves the integration of experience, skills, talents, and opportunities in various roles. Virtual identity can imply to identification and self-presentation of the individual on the Internet as well as a conceptualization of an individuals' online self or persona. Adolescents can construct their online identity with opportunities for experimentation in a safe environment. They can do online-self presentation by less anonymous and more private contexts in SNSs, chat rooms, and bulletin boards. For example, they can select choice as

the self to reveal like gender, interests, or sexual preference (Subrahmanyam and Smahel, 2011: 59 - 77).

- Adolescence is a time of change to develop sexuality with increased sexual drive and interest in sex. The Internet can provide adolescent sexuality as the *Triple A Engine* (Cooper et al., 1999).
    - Accessibility implies many easily accessible web pages and applications to communicate about sexual issues.
    - Affordability refers that online pornography and sexual communication are cheap.
    - Anonymity that allows adolescents entering online sexual communication.

  Adolescents can use the Internet to get information about their changing bodies and sex. They can participate in online sexual exploration by constructing and presenting sexual selves, engaging in sexual conversations or cybersex, and accessing pornography (Subrahmanyam and Smahel, 2011: 41-55).

- Adolescents can also use the Internet to find out health information such as websites, bulletin boards, and physical blogs. The issues that adolescents like to seek out relate to sexual health, pregnancy/birth control, body image, grooming of genital areas, AIDS and other sexual transmitted diseases. The Internet can provide anonymity for young people who are not comfortable asking health information in person (Subrahmanyam and Smahel, 2011: 143-155).
- The Internet can improve academic performance due to the wealth of international information available. Moreover, the Internet acts as a channel for teachers and schools to deliver their content of e-learning to students. So, students can use this channel for studying. Moreover, there was a study conducted to prove that low income students can use this Internet to increase their studying performance (Jackson et al., 2006).
- In online settings, adolescents can participate with other people through various applications. The online settings like SNSs, instant messaging, chat rooms, and bulletin boards can create online communities where adolescents can interact with each other. This is a good opportunity for expressing leadership and becoming stakeholders in the community. It also encourages youths to share

their ideas and feeling without social pressure, so youths can get confidence to communicate with other people (Cassell, 2006).

However, adolescents' Internet use has side effects when they conduct themselves in an inappropriate way and show their risk behavior. For example, adolescents can always connect with peers, so this impacts their lives such as their leisure activities, their families and their learning. The inappropriate use and risk behavior of the Internet can take place in the following ways:

- Adolescents don't follow morality and ethics online. By falsifying their information online, adolescents provide incorrect or incomplete information as well as lying and faking information. Furthermore, they may steal and cheat on the Internet like hacking and voting with multiple accounts. Additionally, adolescents may conduct cyber plagiarism. They copy information such as the text of papers, images, films, movies and other online material from websites without citing the author. Next, adolescents perhaps do software piracy and illegal downloading of digital content (Subrahmanyam and Smahel, 2011: 103-119).
- Adolescents may spend excessive time and frequency use on the Internet. As a result, this affects other activities such as sleeping and participation in physical activities. Otherwise, adolescents may decrease physical activities and increase leisure-time computer use. This leads to health problems.
- Direct effects of health problems also can result from excessive computer use, like injuries of figure, back, wrists, and eyes; as well as physiological arousal like breathing, heart rate, and blood pressure while playing games, watching violent content, and interacting with peers (Subrahmanyam and Smahel, 2011: 125-126)
- Indirect effects of health problems like obesity can result in several diseases; as well as changing sleep patterns causing mood regulation problems, learning and memory problems and poorer school performance (Subrahmanyam and Smahel, 2011: 126-129)

- Decreasing relationships with their peers and family may result in loneliness that leads to depression and fluctuating self-esteem in adolescence (Subrahmanyam and Smahel, 2011: 130-131).
- The Internet also delivers inappropriate content to adolescents. Violent content like games, clip videos, and pornography affects to maladaptive adolescents such as aggressive and violent behavior. The aggressive behavior includes verbal aggression, relational aggression, and physical aggression. (Subrahmanyam and Smahel, 2011: 180-190). As well, adolescents can get pornographic content by intentional or unintentional exposure.
- The Internet can be used to insult or threaten someone. This is called cyber bullying. Adolescents may use text messaging, e-mails, defaming websites, and social network sites to taunt, insult, threaten, harass, and intimidate their victims or other adolescents (Subrahmanyam and Smahel, 2011: 190-194).
- Adolescents may use the Internet to communicate with strangers who can solicit them. Therefore, they may be at risk for sexual solicitation and sexual exploitation by adult sexual predators. They may be solicited to talk about sex and be requested for personal sexual information (Subrahmanyam and Smahel, 2011: 195-196).

From literature review, Internet use can affect adolescent development and maladaptive pathway. When adolescents use the Internet in an appropriate way, it can develop social skills, provide health information, and offer learning content to adolescents. For example, adolescents can use the communication applications on the Internet to contact their peers or knowledge experts. This can lead to social and intellectual development. They can use the Internet to find information about sexuality and health. This impacts their sexual and physical development. Especially, the Internet as a knowledge source can develop adolescents' intellectual skills.

On the other hand, the Internet leads to maladaptive pathways, when adolescents use it in an inappropriate way or access inappropriate websites. Adolescents may spend much time on entertainment activities on the Internet. Therefore, their leisure time is interrupted for development. Moreover, they may access violent or pornography that

leads to undesired outcomes like increasing aggressive behavior and misunderstanding about sexual behavior.

Therefore, teachers who play a key role for adolescent development have to pay attention to adolescents' activity on the Internet. Teachers should support their students to use the Internet for learning. This will match with students' development in terms of social skills, intellectual skills, and physical development. Teachers should be aware of students' Internet use in an inappropriate way. They should learn to integrate their practices with the Internet.

2.2 Thai Teachers' learning

2.2.1 Steps of learning in action

Teachers as knowledge workers have the responsibility to develop their students. They as well take responsibility to prevent students' risk behaviors. They can develop skills for their students like elf-directed learning for Internet use. Therefore, teachers require learning to improve their practice. Then, they can perform to develop their students. Steps of learning (Garvin, 2000) proposed a framework of guidelines for learning in an organization. A knowledge worker can apply it to better perform in an organization. This leads to creating a learning organization. Stages of learning include basic steps of a learning process.

The steps of a learning process or stages of learning include three steps for knowledge workers to develop a learning organization as shown in Table 2.4. There are acquiring information, interpreting information, and applying information (Garvin, 2000).

The first step is acquiring information. There is a lot of information in an organization. Therefore, knowledge workers have to be able to distinguish relevant from irrelevant information. This is separating "signals" from "noise" (Garvin, 2000: 21). A signal refers to information that relates to an activity or event, but noise means any contradictory, confusing, random information that is vague. Organizational learning required clear signals and minimal noise.

Acquiring information refer to select valuable information. Knowledge workers have to form a hypothesis or a perspective. Then, they collect information following the hypothesis or a perspective. However, they should explore unexpected and occasional information that may come later, or impact to an event. This will help knowledge workers understanding in situations and supporting decisions.

Table 2.2 Steps of learning in action

Steps of learning	Actions
Acquiring information	• Understanding to allow new ideas to flourish • Distinguishing relevant and irrelevant information • Remaining open to unexpected and occasionally unwelcome information
Interpreting information	• Classifying, grouping or placing within a larger context
Applying information	• Translating interpretation into concrete behavior • Action is essential as behavior to reflect new knowledge.

The second step involves interpreting information. This concerns transforming collected information into useful information. It implies to classify, group, and place information within a larger context. These can deliver developing models for understanding, for meaning and of assembling schemes. As well, it can guide behavior and play a vital role in decision making. A framework of interpreting information should be reasonable or show cause-and-effect, and updated following active environment.

Interpreting information needs a framework of an organization. A framework involves a set of shared assumptions like an organization's mission and a competency. However, a framework can be obsolete. There are two challenges of an interpretative framework. First, an interpretative framework should be considered all the time. It can be tested and updated following current situation. Second, an interpretative framework involves estimating of a real situation. It is incomplete. There is enough room for debate. As a

result, interpreting information relies on decision making by selecting the most accuracy in a real situation.

The third step as applying information identifies doing following interpreted information. Action is important because it concerns knowledge. Knowledge workers can modify their behavior according to interpreted information. They have to realize to change their habits and routines. Then, they can undertake new activities to improve their performance. This can lead to a learning organization.

To implement a new interpretation, knowledge workers need opportunities. They may need time to learn new behaviors. They should also eliminate unnecessary tasks. In addition, technology, and financial incentives for practice may be required by knowledge workers. This can overcome inaction of workers in case of an inability and unwillingness to act on new interpretations.

2.2.2 Types of learning

Table 2.3 Types of learning

Types of learning	Actions	Results
Intelligence gathering	• Search • Inquiry • Observation	• Attending to currently available information
Experiential learning	• Reflection and review • Single case or comparison reviews • Individual, group, or organizational reviews	• Drawing lessons from activities
Experimentation	• Exploration • The probe-and-learn process • Demonstration projects • Hypothesis testing	• Trying out new designs or theories to test their validity

Garvin (2000) provided three types of learning or modes of learning as shown in Table 2.3. They comprise intelligence gathering, experiential learning, and experimentation. These types of learning can be applied into the learning process for developing an organization. Knowledge workers in an organization should know the types to adopt and apply to their learning. Then, they can select a suitable type for their learning. Remarkably, intelligence gathering refers to collecting currently available information. Experiential learning refers to drawing lessons from the past. Experimentation refers to looking ahead by trying out new designs or theories to test their validity.

Gathering intelligence means selection, collection, interpretation, and distribution of data that is accurate and up-to-date to develop an organization. Gathering intelligence concerns data that can be collected from individual or organizations. It has to be legal and ethics. Knowledge workers have to decide what information they want. The information can lead to a working process in an organization. Moreover, it affects effective decision making.

Data can be gathered in three ways: search, inquiry, and observation. Search involves seeking public sources and documents for data. It can be divided to active and passive modes. The active mode can be adopted in unpredictable, turbulent and complex environment. The passive mode is like viewing and monitoring in predictable environment. Knowledge workers should get data from diverse sources, cross-check it, deliberately shift to active search, devote effort to analyze it, and directly connect data to decision making. Therefore, suitable questions should be raised. Additionally, irrelevant data should be cut off as distinguishing noise from signals. Data should be interpreted and then guide knowledge workers to take action. Intelligence gathering can show the acquire-interpret-apply cycle.

Inquiry can be adopted, when data is not exited or completed. It involves interviews or questionnaires to collect data like survey of voters in national election. It needs well planning to get respondents. Questions must be well framed by considering responders' understanding. Views of responders should be carefully concerned because views of responders include feelings and needs. Selected responders must be representative of population. Inquiry can be two approaches like descriptive and exploratory. Descriptive is adopted to find information about frequencies, patterns of use, and product

comparison. It is well-defined methodologies and easy-to-summarize results like focus groups and structured conversation. Exploratory is open-ended questions to elicit responders' views and needs. It may be clinical and ethnographic techniques. This requires skills to conduct unstructured interviews.

Observation suits for knowledge that responders have trouble to communicate. It can be adopted to elicit tacit knowledge like processes or practices that is internalization and performed without thinking. Observation should be used in real context like a village and an organization. Observers can be participating or passive in the real context. Participating observation lets observers to interact with a specific event like posting questions and clarifying meaning. Passive observers are on interaction. Both participating and passive observers need acceptance like permission from villagers or an organization. The most important skills involve attentive looking and listening. Observers should accurately record what they find without bias. They should not immediately make judgment. Their investigation is important to find causes and effects of a specific event.

Learning from experience occurs when workers learn from their practices. Practice is a main role of knowledge workers, leads to their talents and abilities. Knowledge workers can learn by repetition and by exposure. Repetition concerns effectively doing the same task over time. Exposure concerns a new set of talents or skills that are added through exploration of new task. Repetition and exposure affect to better performance of workers.

With learning from experience, reflection and review can be adopted for repetition and exposure. The reflection and review involve drawing lessons for future work. It will deliver a practical guideline for further work. The reflection and review can be conducted in terms of single case or comparison reviews; as well as individual, group, or organizational reviews. Single case reviews concern narratives of preceding practices. Comparison reviews means assessments of success and failures or divergence of superior and average practitioners. Single case and comparison reviews must be instantly conducted because memories are fresh and data can be verified. Individual reviews focus on refinement and circulation of effective practice. This will deliver tricks of best practitioners. Group reviews is adopted for complex projects. Their goal

concerns to recognize processes and procedures that provide high quality, schedules on track, and costs under control. This is valuable to a company. Organizational reviews involve studies of ongoing operation and assessments of change programs. Studies of ongoing operation refer to finding best practices in an organization. Assessments of change programs focus on capture of real situation in change programs. They include pointing out unexpected problems and difficulties, and identifying differentiates between real situation and a design program.

Experiential learning can imply to reflection and action. This relies on action after finding facts in operating. It can imply to learning and doing. Experiential learning consists of two situations like a real and simulated problem. A real problem should relate to measurable results and be an important project. It can motivate workers to learn by providing a designed solution. A simulated problem can be adopted for workers' learning in specific skills. It may be simple or complex. It must be as realistic as possible, support variety of skills, and have low risk. For experiential learning, program design should considerate a problem that is complexity, in scope of specific skill development and unexpected surprises. It should provide time for workers' learning. Program design should concern teams as a learning process. Teams lead to opportunities to combine skills, explore new frameworks and share knowledge.

Experimentation is adopted for learning in unfamiliar concepts or unproven theories. It involves creating innovation or proving a new action. Generally, it is called a try-it-and-see approach. It can be exemplified by R&D labs and marketing research departments in organizations. It has an element of risk because failure may occur. Therefore, experimentation requires deliberate manipulation of conditions. There are two types of experimentation: exploratory and hypothesis-testing experiments.

The exploratory experiments are done for discovering or "to see what would happen if" such as the probe-and-learn process and demonstration projects. It can be adopted in an organization for trying in new markets, new technologies, new operating systems, and new organizational forms. In term of management, exploratory may be used to find benefits and risks in a new idea or reaction of employees. In market research, exploratory can identify customers' reaction in a company's product. This also involves predicting future behavior of customers.

The probe-and-learn process can explore frontier environments that are ambiguity and uncertainty. It requires careful planning including four critical elements like a starting point, a feedback loop, a process for rapid redesign, and a stopping rule. It is different from trial and error. A starting point should enough cover potential users or customers. A feedback loop is required to learn how users' reaction. A rapid redesign is used to immediately respond to feedback. A stopping rule is set to define the end of a project. The probe-and-learn process delivers knowledge in a variety of real settings. The process is simple and straight-forward.

A demonstration project can be applied to predict in complex systems. The complex systems show many interactions of social and environmental factors. In the complex systems, a prototype is needed to see holistic change including operations and use. A demonstration project frequently concern new technology and operating methods. There are two forms of demonstration projects like on-line experiments or large-scale simulations. On-line experiments lead businesses to investigate reactions of real employees and customers. Large-scale simulations relate to construct mock-ups or models for participants to play their roles.

The hypothesis-testing concerns finding out new explanations and confirming prevailing views. It leads to generating data, validating theories, and accepting new ideas. It focuses on deductive, discipline, and targeting for testing. Knowledge workers can use them to prove relationship of variables. Problems for the hypothesis-testing must be well structured. To avoid bias, understanding of testing must be deep enough. Environments must provide selected variables.

2.2.3 Leading learning

Leading learning involves a process whereby knowledge workers can lead or be led to learn. As shown in Figure 2.3, leading learning can be classified into four groups such as teaching and learning, creating the opportunity, setting the tone, and leading the discussion.

Figure 2.1 Leading learning

Teaching and learning refers to a teacher as knowledge provider. Knowledge is transferred like top-down or center out processes. Teachers are viewed as experts to provide concepts and ideas to students. Students can learn by accepting teachers' concepts and ideas. Deeper learning of students is the most important. Therefore, discussion and debate can be applied to foster students' learning. In addition, students learn how to learn is currently popular. This affects to develop working skills and capabilities of workers in an organization. To support workers' learning, executives should provide learning environments in organizations.

Creating opportunities can allow workers to learn in organizations. Executives can support workers to set up a group for learning such as creating forums by setting goals for learning; exploratory assignments by setting assignments to improve work; and shared experiences by setting a common problem to solve.

Learning forums in assignments, activities, and events can foster workers' learning. Learning forums should have clear goals that may difficult problems and development of an organization. They allow participants to collect data, provide time for reflection and interpretation, and lead to deep understanding and actions. Learning forums can be

occurred by providing opportunities of executives for planning meetings. Executives should focus on personal development, using errors as opportunities for improvement, and praise workers for their effort.

Exploratory assignments involve open-ended questions that lead participants to set a meeting for learning. Executives should provide the give and take atmosphere for participants' learning. In this practice, participants can share best-practices, accelerate progress, foster thinking to solve a specific problem. They can take time and require free thinking to achieve.

Shared experiences is learning that affects workers to act a learning process like a successful worker. Workers who only copy other experiences still have questions about rationale. They may not respond to current problems because they don't understand the real need of their organization. Workers who learn a learning process can understand and accept the need for change of their organization. They can change their practice to improve their organization.

Setting the tone relates to encouraging knowledge workers to learn through challenge and dissent, security and support, and open communication. The proper tone requires hard work to foster open-minded inquiry and workers' interactions.

Challenge and dissent leads to workers to face difficult issues of an organization. This can be framed in ways to encourage inquiry and foster learning of workers. Executives can select approaches including developing proposals to motivate workers' discussion, providing unexpected questions to lead new thinking, or changing in processes and procedures to introduce contrary.

Security and support can meet workers' need to conduct learning in an organization. To learn, workers have to practice and think in a different way from the past. This delivers risks and vulnerability to move forward. Executives must give workers support by setting the environment in ways of protection. For example, executives allow participants to talk about hard issues and open up discussion. They should also help learners when learners face risks. This involves security.

Open communication leads workers to access to information. Executives can set ways about sharing knowledge. They may provide incentives for sharing knowledge, redesign work processes, and issue policies to require managers to seek help from other to complete task. In addition, executives must present their attitude and tone about inviting to communication.

Leading the discussion can result in climate of learning like questioning, listening, and responding. Discussion is a part of learning process. Participants in discussion must actively engage until they meet a conclusion.

Questioning can motivate and force participants in discussion to inquiry. This can lead discussion forward. Powerful questions affect participants thinking and reflection. They rely on the situation and current needs. They may be used to frame issues, offer instructions, solicit information, probe for analysis, draw connections, seek opinions, and ratify decisions. In addition, they can be adopted to overcome biases and learning disabilities. Executives should practice questioning by seeking instruction, learning through observation, and engaging in deliberate practice.

Listening can provide real learning in a discussion. To be active listening, attitude is as important as skill. Listening can be improved practices. Patience should be practiced. For example, executives should not interrupt others by jumping to conclusions or present so much their own thinking. Executives must learn to listen about disconnects. They must link between a source and a receiver. They may suspend their ideas to receipt information from others. They should learn to attend, and listen for effects and tone of speakers. This affect to effective discussions.

Responding delivers active discussion. Executives have a variety of choices of responding like venturing opinion and breaking out argument. However, there are two practices that executives should avoid like depreciation-of-the-learner and drowning-of-the-learner. Executives should respond by questioning. Moreover, types of response affect to a spectrum that range from reflective and speaker-centered to intrusive and interventionist. At the top, responses like silence, restatement, and clarification tent to focus on the speaker. At the middle, responses like encouragement and suggestion inject supportive point of view. Responses like disagreement and criticism concern inject

negative point of view. At the end, responses like ridicule, denial, and threat involve using power.

2.2.4 Qualifications for Anti-Drug policy (QAD)

The Thai Red Cross Society has issued standards to prevent drugs' spreading in Thailand. This has led to the qualifications for anti-drug policy or QAD. The QAD is adopted in many Thai schools as voluntaries. It focuses on creating activities for students' leisure time. The QAD provides a guideline for teachers' practice. It is concerned with school operations in term of school management and student development. Its purpose involves improving drug immunity of students. This can occur by creating activities for students. The activities have to concern students' interest and suitability in leisure time. Therefore, students stay away from drugs.

The activities are created and operated by cooperation of school administrators, teachers, and students. The QAD supports schools to have leading school administrators, leading teachers, and leading students to operate activities. The activities have to suit for students in each group like leading students, non-risk students and risk students; as well match with their interests. In terms of levels for certification, the QAD provides guidelines for certifying schools.

Level 1 means a school that can provide activities within a school.

Level 2 means a school that can provide activities with participation of parents

Level 3 means a school that can provide activities with the participation of communities.

The QAD provides concepts of quality activities to schools. The quality activities prevent students' drug involvement. Students are interested in the activities and like to do them in leisure time. The quality activities have to rely on students' ability. Furthermore, they can be improved from experiential learning. The QAD adopts continuous improvement to create quality activities. In terms of continuous improvement, the PDCA cycle as Plan Do Check Act was introduced to schools. This is school operations of QAD. The PDCA cycle is shown in Figure 2.2.

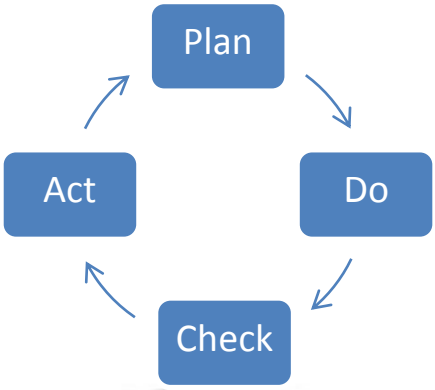

Figure 2.2 PDCA cycle

For Plan, leading school administrators, leading teachers, and leading students have to set a plan. They can form activities for student development according to school policies and QAD. Then, they define the workload and tasks of activities. They have to identify people who will take responsibility for each task. Furthermore, budget, time frame, evaluations have to be identified. Each activity should be considered if it is consistent with QAD or not. Especially, there should be a survey of students who participate in each activity about their expectation and suggestions. Each activity has to be approved by the school director before beginning.

For Do, people who take responsibility have to follow the plan. They have to cooperate by attending meetings. This leads to the development of goals, budget and evaluations; as well as getting feedback from the team. They have to record operations and evaluations to provide an evidence for auditing.

For Check, people who take responsibility have to evaluate operations. Particularly, they have to compare results with goals in a plan. Internal auditors who are appointed by the school director have to check operations, expenses, and results. Then, they have to prepare a report for the school director.

For Act, people who take responsibility have to cooperate for analyzing evaluated results. They also have to check information from internal auditors and people who take responsibility in an activity. This leads to identifying problems and their causes. Then, they can define new operations to correct the problems.

Therefore, the framework of the Deming cycle provides a way of teachers' practice to develop their students. This is a system for student improvement. Teachers can follow it to create activities or projects for student development. This delivers better quality of activities or projects. Teachers can improve their practice as learning from their experience. With this project, PDCA cycle can be adopted to improve students' Internet use by creating an activity for students.

2.3 Self –directed learning (SDL)

Self-directed learning (SDL) leads to initiative and autonomous learning of each person. This concerns the capacity of people to create, share, and use knowledge. SDL matches with the ICT use for learning. Self-directed learners learn by themselves with a variety of knowledge sources that includes ICT (Candy, 2004). ICT is an available source for learning of high school students. Especially, the Internet that is available in school, their house and their community. Students who have SDL skills can use the Internet to learn in their leisure time. They can take responsibility, initiate, and take more enthusiastic to learn (Song and Hill, 2007; Hung et al., 2010). Students can make choices, manage their time, set their goals, and find resources on the Internet.

Candy (1991) explained that SDL can be the base for lifelong learning. SDL can give non-routine learning and complex problem solving that engages lifelong learning (Timothy et al., 2010). Additionally, SDL involves individual freedom, responsibility, and personal views to learn in specific context (Sofie et al., 2008). Away from an educational institute, people with a SDL skill can choose what they want to learn. They can acquire, create, and share about their learning. Therefore, SDL should be cultivated for students to create lifelong learning that can influence a knowledge-based society and economy. Teachers can create an experience to construct SDL skills for their students by providing opportunities for organizing and managing their activities in a specific context (Valjataga and Fiedler, 2009).

Self-directed learning (SDL) is a process and a personal attribute for learning in context. It involves lifelong learning. SDL can pursue lifelong learning that affects to create a knowledge-based society. SDL is mentioned as being a relationship of lifelong learning. It also relate to learning in leisure time.

2.3.1 SDL as a learning process

Knowles (1975) pioneered self-directed learning (SDL). He proposed that SDL is a process in which individuals take initiative, with or without help from others, in diagnosing their learning needs, formulating their learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating their learning outcomes. With his concept, SDL can occur with the help of other people like teachers, tutors, and peers. Knowles's concept focuses on adult education.

Moreover, SDL as a learning process occurs in an educational system and informal education. Candy (1991) identified the learner control of instruction and the independent pursuit of learning. The learner control relates to organize instruction in formal settings. The independent pursuit of learning concerns learning of an individual in the natural societal settings. To support SDL as a learning process, a learning activity or strategy can be designed and led learners.

SDL matches with student-center. Students are able to integrate their knowledge, take responsibility and have freedom to learn (Bolhuis and Voeten, 2001; Sofie et al, 2008). This influences higher learning achievements and understanding concepts. In this way, students require a suitable instructional method that provides freedom to think and conclude knowledge. SDL leads to active learning of students. Teachers require practice as facilitators.

Teachers should encourage students to do activities that are concerned with learning (Knowles, 1975; Candy, 1991; Bolhuis and Voeten, 2001; Sofie et al, 2008). Student participation is a key concept like students' questions and students' activities. Teachers should build students to take more interest in a learning activity. For example, they can settle groups of students for learning activities. This will help students take responsibility for completing their work. SDL as a learning process concerns with designing learning activities to students.

In basic education, Timothy and colleague (2010) proposed a process of SDL. It includes goal setting and task analysis, implementation of the plan, and self-evaluation.

The process can be adopted to be a framework of a learning activity that can improve students' SDL in a basic education. Goal setting refers to academic performance such as grade and points and non-academic goals such as publishing an essay in the school's newsletter. These can build learners' motivation and confidence to learn. Task analysis involves identifying learning tasks of learners. Learners will know their framework and steps for learning. Implementation of the plan can be defined as self-management. This relates to learners' willingness and ability to manage their workload and time without the supervision by teachers or other adults. Self-evaluation concerns that learners value the benefits to reflect their learning. It can lead to learners' understanding their strengths and weaknesses. They will then be aware and correct their learning.

2.3.2 SDL as a personal attribute

A study of SDL that concerns personal attribute aims to develop a learner assessment. The SDL as personal attribute implies to personal autonomy, self-management (Candy, 1991) and goal orientation of learners (Brockett and Hiemstra, 1991). Personal autonomy means an attribute of learners in terms of independence, freedom of choice, and rational reflection (Candy, 1991). Self-management of SDL implies self-direction of each learner like willingness and ability to learn (Candy, 1991); and controlling learning within specific context (Garrison, 1997). Goal orientation is learners' responsibility (Brockett and Hiemstra, 1991) that was studied as a personality trait (Lounsbury, 2009).

With this project, SDL assessment will be conducted by teachers. Teachers will assess students during their learning. This relates to students' self-management. Self-management occurs during implementation of a learning plan. It comprises of ability and willingness (Candy, 1991) that occur since students are doing a learning activity. Ability and willingness imply to spend leisure time to learn because they concerns initiating to learn and managing time to learn (Timothy et al., 2010). They can be detected by observation.

According to a concept of ability and willingness to learn, Grow (1991) guided observation of teachers to detect students' degree of self-direction. Observation of teachers to assess students can cut off a problem about over and under self-reporting of

students. The degree of self-directed learning comprises four types of students: dependent, interested, involved, and self-directed students. These were classified by ability and willingness as show in Table 2.4. This relates to the ability to perform well in learning by setting one's own goals and using learning resources. The willingness refers to the confidence to use their ability. The willingness involves the motivation and experience to learn.

Table 2.4 The students' degree of self-direction (Concluded from Grow, 1991)

Students	**Ability**	**Willingness**
Self-directed	- Able to set own goals, time management, and self-evaluation for learning - Using experts, institutions, and other resources to pursue educational goal	- Willing to take responsibility for learning
Involved	- Having learning skills like self-directed	- Lack of willingness (needing more confidence in learning)
Interested	- Lack of ability like goal setting skills, time management, self-evaluation	- Responding to motivation technique of low directive and high supportive teachers by linking the subject to students' interests
Dependent	- Lack of relevant knowledge and skills to learn	- Needing discipline and direction or teacher-center

The level of self-directed students or independent learners refers to students that have the ability and willingness to set their own goals. They take responsibility for learning through time management, project management and self-evaluation. They utilize experts, institutions, and other resources to meet their goals. However, they do their tasks with or without help of the teachers. In this case, they still interact to teachers to help them learn. (Grow, 1991).

The level of involved students implies that students see themselves as participants in education and have the skills and knowledge to explore a subject on their own. They like to work in a friendly group, although they need to improve their confidence and sense of direction. Students in this level can gain an advantage of learning how to learn. (Grow, 1991; 1994).

Interested students means students who respond to teachers' motivational techniques. The interested students may ignore a subject because they cannot see its purpose. They will go along with teachers, if they know the reasons of the study. Therefore, teachers should clearly explain the importance of a subject and concrete results of learning. Students at this level need skills of goal setting to motivate their learning; subsequently, developing to the next level (Grow, 1991).

The lowest level of self-directed learning can be described as dependent students. Dependent students are students who lack relevant knowledge, skills, and experience or motivation and self-confidence to pursue educational goals. Their learning occurs by mainly responding to teachers as experts; consequently, this level can be defined as teacher-centered students (Grow, 1991).

2.3.3 SDL in Internet context

SDL relates to ICT use. Self-directed learners can use ICT for learning purpose. SDL included a learning process and ICT is a tool to support a learning process (Candy, 2004). ICT responses to learning needs of self-directed learners. Self-directed learners can use ICT to capture, store, manipulate, and access information to learn. They can also contact experts around the world via online. At the present, the Internet is a main part of ICT can support SDL.

SDL fits with online learning. In an online setting, learners may have a physical and social separation from teachers, experts, and other learners; as well, learners have an opportunity to conduct their own learning, understand a subject matter, and finish their assignments. From studies, online learning requires a high level of self-direction (Song and Hill, 2007). Learners are not controlled and are impacted perception of his or her level of self-direction in online learning environment. Online learning context increases

learners' responsibility and initiative toward learning by having more control of their learning and using resources more effectively. Furthermore, online learners must have SDL to make choices, manage their time, set their goals, and find resources for learning (Kop, 2011).

2.4 E-learning and sequencing planned e-learning interactions

E-learning can be identified in many terms. It can be a broad term of using electronic technology for learning. This term covers using materials for learning like a CD-ROM, learning via local area network (LAN) and on the Internet. E-learning can be adopted as a full course or a part of conventional classroom. The most common component of e-learning environments is content that has to be delivered to learners (Alhabshi, 2004). Moreover, e-learning can include online learning. Online learning allows learners who don't have access to teachers to learn by using media technology. Learners can learn from content and contact with teachers. Most e-learning is transferred by the Internet.

E-learning means learning is based on using electronic technology. It adopts information and communication technology (ICT) to create interactions for learning. In terms of interactions by using ICT, students can communicate with teachers, other students, and experts in a field. They can also find and study electronic content that delivers satisfaction and effectiveness for learning (Alhabshi, 2004). E-learning can be adopted for learning in a classroom or a web-based course. With support of the Internet, students can find content and communication for learning. This can support students to study following teachers' practice.

The Internet drives e-learning. Teachers should be aware of students' Internet use for learning. Learning on the Internet can provide satisfaction and retention of information. Students can integrate ideas and concepts, find promotion of problem solving, and create critical and active thinking skills (Hrastinski, 2009). Students may interact with teachers, other students, experts and electronic content via online. These can lead to learning effectiveness. Learning on the Internet can lead students to share with other in some activities. This can include a process of doing, talking, thinking, feeling and belonging to get involvement with other students and teachers.

Moore (1989) proposed three types of e-learning interactions for students' learning. They involve a social interactive process such as learner-teacher and learner-learner interaction and reading such as learner-content in online. The learner-teacher interaction concerns motivating and stimulating a learner and giving the learner to clarify learning content. The learner-learner interaction relates to one learner and another learner, alone or in group setting. The learner-content interaction involves a process of a learner to intellectually interact with content. Later, Hillman and his colleagues (1994) added learner-interface interaction to show the learners' interaction with the medium. This identifies the learners' use of electronic tools. Moreover, Moller (1998) proposed three types of virtual community in WBI (Web-based instruction). They include academic community involving interaction between learners and instructors, intellectual community involving with peer interaction or collaborative work, and interpersonal community involving with interpersonal encouragement and assistance.

By applying the concept of e-learning interaction, Hirumi (2002) provides a framework of teachers' practices to support e-learning. This can refer to activity-based interactions or interactivities that are designed to stimulate active learning and the development of e-learning. The framework is comprised of three interrelated levels of interactions such as learner-self interactions, learner-human interactions and learner-non-human interactions, and learner-instruction interactions. Figure 2.3 illustrates the three levels.

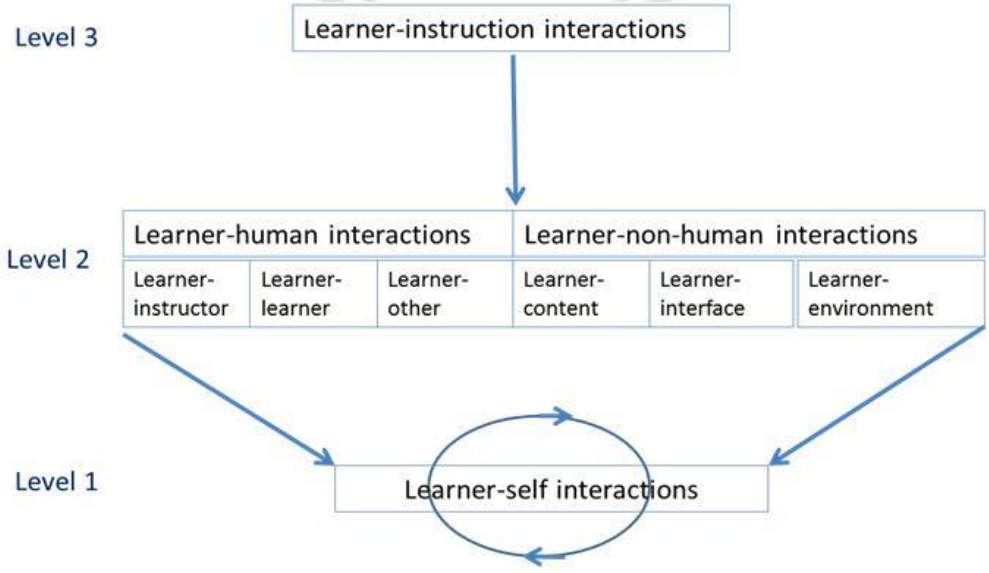

Figure 2.3 Three levels of planned e-learning interactions (Hirumi, 2002)

Learner-self interactions refers to a process whereby each individual learner monitors and regulates his learning. Learner-self interactions can rely on instructional methods and epistemological beliefs of an instructor; as well as other learners' interactions in the online environment. The instructional method can be designed to improve the interactions that imply to improvement of the responsibility to learn. In these effective interactions, people should drive themselves for their own learning, put in the effort to get required skills and knowledge, correct learning, activate learning, and plan their learning process.

Learner-human and non-human interactions relate to human and non-human resources that simulate interactions in level 1. This can be designed into six classes.

1. Learner-instructor interactions imply communications between instructors and students. Instructors should be concerned with motivating and stimulating learners. As well, they should clear content of a subject for learners. Learner-instructor interactions consist of seven points of learner-instructor interactions (Thach & Murphy, 1995): to set learning objectives, to give timely and appropriate feedback, to facilitate presentation, to monitor and evaluate student performance, to provide learning activities, to initiate and proceed discussions, and to identify learning needs and preferences. The feedback is especially important for online learning.
2. Learner-learner interactions point out communications of one learner and another learner alone or in group settings. They may occur by management and design of an instructor. Effective learner-learner interactions are the same as a traditional classroom like group size, group goals, individual roles and responsibilities, group and individual accountability, contact information, communications, and grading.
3. Learner-other human interactions concerns usage of information and communication technology to communicate with experts and other people outside of the classroom for acquiring information. However, this kind of interaction may occur in a traditional setting. Therefore, an instructor should provide an opportunity for learners to access experts and other human resources to meet their educational needs.

4. Learner-content interactions imply that learners access digital content for learning like audio, video, text, and graphic content. Teachers have to design their instructional methods and select suitable content for their students. Teachers have to think about available software, funds and staffing for creating content, durability of content, and return on investment.
5. Learner-interface interactions mean learners use computers' interface as a way to interact with content, instructors, learners, and others to support their learning. The interface should help learners to easily access digital content, manipulate electronic tools, and succeed with their learning objectives. In practice, the mental model of learners plays a main role for these interactions. However, poor design interface leads to learners getting less access to digital content or unable to access the content.
6. Learner-environment interactions happen when learners undertake activities without the use of a computer interface during their learning. Learning is not limited while learners are online. They may need to seek or visit a place to ask experts, observe locations, read materials, and participate in events. These enable learners to complete their objectives. Therefore, teachers should clearly define learning outcomes and plan activities for learners.

Learners-instruction interactions relate to the overall picture of online learning or the online learning strategy that learners have to see. These interactions impact to organize the level 2 and the level 1 interactions. Learners-instruction interactions as level 3 involve deliberate planning for an online learning course like arrangement of learning activities and learning goals. This level focuses on an instructional strategies to design and sequence online learning interactions. The three levels of e-learning interactions can match with a learning process of SDL as shown in Table 2.5.

Table2.5 Interactions of e-learning matching with SDL's process

SDL	Interactions of online learning
Goal setting and task analysis	Learner-instruction interactions
Implementation of the plan	Learner-human interactions and learner-non-human interactions
Self-evaluation	Learner-self interactions

2.5 Definition of Terms

- *QAD* means Qualifications for Anti-Drug policy of the Thai Red Cross Society.
- *Quality activities* refers to activities for QAD that students like to do in their leisure time and suit for students at the present. They can prevent students' drug involvement.
- *Leading teachers* are teachers who are assigned from a school administrator to operate activities in QAD.
- *Leading students* means students who are appointed by a school administrator to assist a leading teacher.
- *Non-risk students* imply students who are not leading students and risk students.
- *Risk students* refer to students who have showed risk behaviors.