

A Design of Personal Learning Network on Social Networking Tools with Gamification for Professional Experience

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Abstract

This research aimed to design a novel teaching and learning process in the professional experience training. The Successive Approximation Model (SAM) was applied in the design process. The framework of the process as proposed, comprised: components of a Personal Learning Network (PLN), the process of PLN, and the process of professional experience. The four components of PLN were: learning resources, learning tools, learning content, and learning activities. In addition, the process of PLN consisted of creation, connection, cognition, and contribution. The implementation of PLN consisted of learning activities in accordance with the process of the professional experience training utilizing gamification features, specifically addable badges, and gamification features on the social networking tool CourseNetworking (CN). The results from the eleven experts revealed that the teaching and learning process using personal learning networks on social networking tools with gamification in the professional experience training course indicated high levels of standard evaluation, innovative attributes, design process, teaching and learning process, and teaching and learning activities.

Keywords: Personal Learning Network, PLN, Social Networking Tools with Gamification, Professional Experience

1. Introduction

The use of internet technology and social media has become an essential part of the lives of billions of people around the world. People are likely to use social media as their main source of information, entertainment, and social interaction (Kemp, 2020). The accelerated growth of digital technologies provides various opportunities for educational development, especially in learning theories and teaching and learning processes. The internet and social networks have recently become necessary tools for communication, teaching and learning, in the especially COVID-19 pandemic that has forced educational institutions worldwide to shift to online learning as the new normal for all kinds of learning content (OECD, 2020; Li & Lalani, 2020; UNESCO, 2020). Teachers and educators have attempted to find the most suitable teaching and learning frameworks and methods to implement in their pedagogy (Cha et al., 2020; Rapanta et al., 2020). One vital aspect of on-site and non-classroom learning is the professional experience.

Professional experience refers to real-world practical work in fields related to a student's major, and is part of many university programs. Its objective is to provide opportunities for students to develop professional skills while undertaking practical learning. Students gain professional experience by working with organizations related to their major and they have to complete their academic work required for completing their degree program. The professional experience requires students to have high level of self-directed learning as part of developing their personal attributes alongside their professional attributes (LaDue & Cohen, 2018).

Personal Learning Network (PLN) has previously been applied in various fields of educational research including professional experience development (Deyamport, 2013; Grant & Hsu, 2014). PLN is defined as connectivism functions as a self-designed, self-initiated system that develops important skills for lifelong learning (Carter & Nugent, 2011). PLN focuses relate to learning in the digital age by supporting formal and informal learning. The use of PLN combined with online learning can promote the professional experience or internships in various learning disciplines, since PLNs are generally created in social networking platforms used as communication tools to connect learners and teachers. In order to effectively promote the professional experience in an online context, the selection of tools for a PLN should provide suitable learning environments for personalized learning.

Social networking tools or platforms used in PLNs were shown to be significant factors in student achievement in a PLN. Social network platforms can be tools for communication sources of information and social interaction (Kim & Sin, 2015; Aillerie & Mcnicol, 2016; Kapoor et al., 2018). However, it is important to choose the most effective platform or tools in order to produce the best outcomes since it could lead to negative influence (Raut & Patil, 2016; Azizi et al., 2019; Beemt et al., 2020). The use of social networking tools associated with gamification can enhance the learning, and the gamified social network can improve students' engagement in and motivation for course content in pedagogical practices (Arnol et al., 2020).

Gamification is the practice of including game-like elements in non-game contexts to motivate desired behaviors (Deterding et al., 2011). Gamification was mentioned as part of the main components of the next-generation Learning Management System (LMS) include: 1) Learning Tools Interoperability (LTI); 2) analytics, advising and assessment in learning; 3) social media design formats; 4) smart phone elements of content and funtionality; 5) game

components; and 6) artificial intelligence (AI) functions that allow students to personalized their learning (Laohajaratsang, 2018). There are many LMS tools designed in the form of apps and websites that allow people to use social networking tools in an educational context. Flores (2015) stated that these gamification features are frequently used by learning platforms such as Duolingo, Class Dojo, Edmodo, Zondle, Socrative, and Brainscape. Among these platforms, CourseNetworking (CN) was suggested as a good example of the recently developed LMS because it is grounded in modern teaching theories and it implements learning management systems design concepts and components (Laohajaratsang, 2018).

It is important to understand how PLN is maintained and nurtured, and to study how the combination of social networks and gamification functions to enhance learners' self-directed learning to gain the most benefits of PLN on social networking tools with gamification in order to produce a novel pedagogical methods under the context of professional experience learning.

1.1 Research Objective

The research objective for this study was to design an innovative teaching and learning processes using PLN on social networking tools with gamification for the professional experience training.

2. Literature Review

2.1 Personal Learning Network

The term “personal learning network” (PLN) was first coined by Daniel Tobin (1998) on his Corporate Learning Strategies websites under “Building Your Personal Learning Network”. PLN can be defined as a “system of interpersonal connections and resources that support informal learning” (Trust, 2012, p. 133). In addition, it was indicated that the terms “Professional Learning Network” and “Personal Learning Network” are often used interchangeably. However, Grant & Hsu (2014) differentiated the terms by using “PLNs” for personal learning network and “ProLns” for professional learning network. In this study, PLN refers to personal learning network since the term PLN is not only used for professional development or purposes but also non-professional purposes, such as students or individuals who use PLN for their personal objectives or interests.

There is scarce publication showing detail or information about types of PLN. Warlick (2009) stated that there are three major types of PLN considering time and accessibility including personally maintained synchronous connections, personally and socially maintained semi-synchronous connections, and dynamically maintained asynchronous connections. This indicates that a PLN is not place or time bound; it is asynchronous, available at any time and place with Internet access, and, in some cases, even without Internet access.

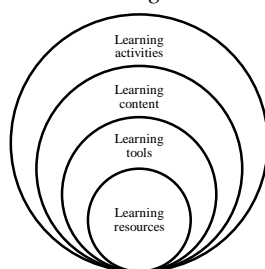
2.1.1 Personal Learning Network Components

A PLN normally includes both face-to-face and virtual professional connections, and is composed of people who learn and share ideas together, as well as resources, tools, and materials that support their learning (American English, 2015). Jarcho (2014) demonstrated that a PLN consists of tools, artefacts, processes, and physical connections. It was presented that the components of a PLN include resources, people, and multimedia web resources (Bauer, 2010). Rajagopal et al. (2012) indicated skill, activity, and attitude intention as the main components of a PLN. Carter & Nugen (2011) stated that a PLN is produced when learners participate in

several virtual communities of practice wherein learners interact online, and form knowledge by sharing and creating learning content.

From numbers of the theoretical reviews, the four components of PLN are: 1) learning resources, which include information, people, and networks; 2) learning tools, which are the platforms, devices, applications, or networks; 3) learning content, including particular subject contents, or any area of interest that learners study, and; 4) learning activities, defined as the activities or processes that learners perform in order to gain or to contribute knowledge.

Figure 1: Personal Learning Networks Components



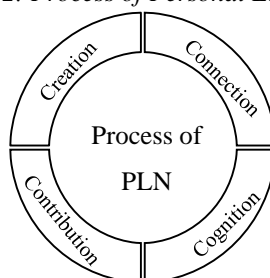
2.1.2 Personal Learning Network Conceptual Models

The concept of PLN is seen as a part of a personal learning environment (PLE) which has been explored and designed presenting the relationships among the personal learning network, personal web tools, and personal learning environment that individuals use to support their learning (Wheeler, 2010). Couros (2010) distinguished the concept of a PLE from that of a PLN by explaining that PLEs are the tools, artefacts, processes, and physical connections that allow learners to control and manage their learning, whereas PLNs extend this model to include the personal connections mediated through PLEs.

The concept of personal learning networks have been explored and published in formal research articles as well as informal publications. Swanson (2013) explained that digital tools and social media networks can be embraced by the learner to create connections with other learners to generate personal learning through curation, reflection, and contribution. Through curation, a learner can gather relevant resources. Then, with reflection, the learner engages new information with existing background knowledge. Finally, during contribution, the learner shares what he or she has learned with their learning connections. Similarly, Jarcho (2010) suggested that the way to see network learning is as a continuous process of seeking, sensing, and sharing. He defined seeking as searching out and staying up to date on information. Sensing is the way that an individual personalizes and uses information. Sensing consists of reflection and putting the acquired information into practice. Sharing includes exchanging resources, points of views and experiences with contact networks. Rajagopal et al. (2012) identified that in order to make the best use of the learning opportunities in personal learning networks, learners need to proceed in three significant tasks that form the basis for other activities within the network: building connections, maintaining connections, and activating connections with selected persons for the purpose of learning. Moreover, the factors influencing choices in building, maintaining, and activating personal learning networks were grouped and presented in relation to three major sections: 1) personal interests; 2) contact and relationship with learners; and 3) external characteristics of the work environment.

From many of the theoretical reviews, the processes of a PLN consist of four main attributes or activities (4Cs), which are: Creation, Connection, Cognition, and Contribution. These processes were used in the designed processes of professional experience teaching and learning.

Figure 2: Process of Personal Learning Network (4Cs)



Creation: a learner creates a virtual identity through tools or platforms in order to start connecting with others. These days, most people have multiple virtual identities on their social network accounts.

Connection: a learner connects to some resources for learning by joining social networking tools or platforms, information resources, people, organizations, or communities. Moreover, a learner connects knowledge from different sources with their own knowledge and experiences.

Cognition: a learner cognitively learns and perceives information about their interests from networks, resources, people, or communities. In this state, a learner may just passively look around for the required information, or collect information about their interest, or they may take a more active role by performing some actions or reactions such as asking questions, making questions, or doing anything to get the needed information.

Contribution: a learner contributes information or knowledge by posting comments, giving recommendations and suggestions when a learner feels confidence that they have enough information to share or when they find some information that might be interesting or useful to others.

These four main activities could occur at any time or stage of learning since a learner could create their new virtual identity at any time if they find a new platform or networking tool for connecting with others. Likewise, a learner could cognitively learn by connecting different resources of information in various forms such as posts or comments before connecting with others at a platform. Moreover, learners might feel that they would like to randomly interact with others or contribute by sharing some ideas or information that they think is interesting with others in a particular platform or networking tool.

2.2 Social Networking Tools with Gamification

Internet technology has encouraged the development of platforms for learning. Teachers and scholars have increasingly turned their attention to educational networking, which is the use of social networks for educational purposes. Social networks are platforms or tools that facilitate the building of social relationships among people of different races and provide opportunities for them to share interests, activities, backgrounds, or real-life connections (Icha & Edwin, 2015). A social network consists of the individuals and the interactional connections or ties

between learners. The interactions may take the form of exchanging comments, knowledge, materials, resources, and advice (DeLaat, 2012). Therefore, the selection of tools used to create a PLN should provide suitable learning environments for personalized learning.

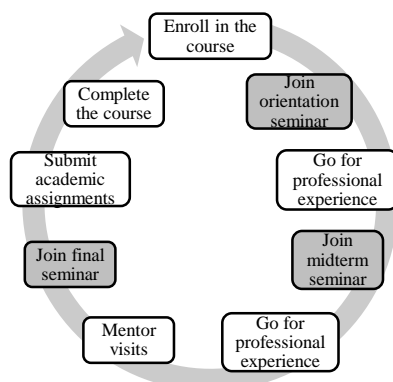
Popular social networking sites that are often used as learning tools by educators include Twitter, LinkedIn, Google+, YouTube, and Facebook. There are many social networking tools designed with the LMS tools. The implementation of the LMS could be in the form of apps and websites that can be used in educational contexts. The application of gamification in education can be seen in the form of software tools such as e-learning, web-based learning, LMS, and Moodle learning platforms (Kiryakova et al., 2014). Gamification is the use of game elements in non-game contexts to motivate desired behaviors in students (Deterding, et al., 2011). Kapp (2014) pointed out that gamification is a useful tool in learning professionals because it includes some of these elements of contemporary games such as points, badges, progress bars/progression charts, leader boards, performance graphs, levels, quests, social elements, avatars, and rewards. These elements of gamification in learning more broadly, motivate student-driven work along with communication and collaboration. The gamified platforms for learning used in educational study were ClassCraft, Rezzly, Seppo, Youtopia, Kahoot, Languagenut, FluentU, The Language Game, and MindSnacks (Goshevski et al., 2017; Prathyusha, 2020). With so many tools to choose from in educational technology, an educator has many possibilities for using gamification according to different target audiences and combining gamification with the appropriate learning approach or strategy for each audience.

In this study, CourseNetworking (CN) was implemented as social networking tool since it is grounded in modern teaching theories with gamification design concepts and components. CN features gamification elements such as badges, leaderboards, progress reports, as well as a learner analytic system. It can be used on both personal computer and smartphone application. Moreover, CN allows instructors to design and add-on their own badges for any particular rewarding purposes.

2.3 Professional Experience

The professional experience has the nature of on-site-learning or non-classroom learning. The professional experience course aims to enable learners to gain and apply knowledge learned in the workplace, and become competent in practical skills by learning in real-world practical situations as their life-long learning skills. Chuenpraphanusorn et al. (2017) stated that some universities in Thailand adopt different models and methods of education management and provide good education and course curriculum for professional experience programs. According to the professional experience program details, fourth year students in the professional experience program have the responsibility of finding a workplace in their first semester, and then go to work at the approved organization in the second semester. During the practicum, which is their work at the organization, the student interns must join three physical classes which are called professional experience seminars. These include an orientation seminar, a midterm seminar, and the final seminar. The students need to perform as a student intern at the organization they choose, and submit academic assignments as requirements to complete the professional experience course. The procedures for completing the professional experience program are presented in the figure below.

Figure 3: Process of the professional experience



Some problems can occur during the professional experience, including problems with the mentoring system due to long distances which the mentors have to travel for meetings at different locations, and problems with some student interns at the workplace, such as the lack of discipline and punctuality. There are also some problems related to the academic requirements of the university, such as delayed submission of work and incomplete tasks. The student interns are required to possess the self-directed ability to satisfy all the requirements of the academic program, such as joining three compulsory seminars, submitting all assignments including the professional experience daily report, term papers, and evaluation from organizations, and they must also remain responsible for work-integrated learning task at their workplaces. This field experience program can play an important role in reflecting the required qualifications of graduates, and revealing the obstacles faced by student interns, employers, and organizations.

3. Methodology

The methodology of this research included three phases: preparation, iterative design, and iterative development. Each of these is part of the process of the Successive Approximation Model (SAM) instructional design process (Allen, 2012).

1) Preparation: this research started with information gathering by conducting literature reviews to identify relevant theory, concepts, and research related to the use of personal learning networks (PLNs) on social networking tools with gamification, as well as the procedures of the professional experience training course. The analysis of performance, and problems in the professional experience was conducted using surveys and interviews with people involved with the professional experience course including the student interns and lecturers. In addition, the framework Savvy Start was applied using interviews with experts of learning network technology and professional experience to discuss the use of PLNs on social networks with the gamification learning concept applied to the professional experience training. The data was collected, analyzed and synthesized for the design stage.

2) Iterative design: the establishment of the design was commenced as the prototype teaching and learning process using information from theoretical reviews, and information gathered for the teaching and learning process for the professional experience. Then the information from the Savvy Start discussion was added to scaffold the prototype of the personal learning network

on social networking tools with gamification in the professional experience course. Moreover, the instruments for evaluation were designed and developed for the process evaluation.

3) Iterative development: the evaluation from the experts was conducted. In this phase, the teaching and learning process was presented to eleven experts including five experts from the area of technology for learning, four experts from the field of professional experience learning area, and two experts from the curriculum and instruction area. In order to validate the designed teaching and learning process, the eleven experts were asked to evaluate the designed teaching and learning process using a five point Likert Scale which ranged from strongly agree/excellent/very appropriate (5 points) to strongly disagree/very poor/very inappropriate (1 point). The areas of assessment consisted of: evaluation standards (Joint Committee on Standard for Education Evaluation, 2020); innovation attributes (Rogers, 2003) since this was considered an innovation in the teaching and learning process; design process (Allen, 2012); teaching and learning process (Smith & Ragan, 1999); and teaching and learning activities regarding PLN processes. Moreover, the experts were asked to give their opinions and suggestions regarding the use of PLNs on social networking tools with gamification in teaching and learning in the context of the professional experience.

4. Results and Discussion

4.1 Research Results

The following shows the results of the assessments by the eleven experts including five experts from the area of technology for learning, four experts of professional experience learning, and two experts from curriculum and instruction area. The results are displayed in five categories. First, the results of the standard evaluation are indicated in Table 1. Second, the results of the innovative attributes assessment are shown in Table 2. Third, the results of the design process assessment are defined in Table 3. Fourth, the results of teaching and learning process assessment are revealed in Table 4. Finally, evaluation of the teaching and learning activities using personal learning network on social networking tools with gamification in the context of the professional experience is shown in Table 5.

Table 1: Results of standard evaluation (Joint Committee on Standard for Education Evaluation, 2020)

Areas of assessment	Mean	Mode	S.D
Utility Standards	4.75	5	.371
Feasibility Standards	4.84	5	.302
Propriety Standards	4.67	5	.338
Accuracy Standards	4.85	5	.311
Overall	4.78	5	.085

The results of the standard evaluation have an overall score of 4.78, which indicates that the experts agreed that this teaching and learning process meets the program evaluation standard. The Standard Evaluation areas include utility standards (4.75), feasibility standards (4.84), propriety standards (4.67), and accuracy standards (4.85).

Table 2: Results of the innovative attributes assessment (Rogers, 2003)

Areas of assessment	Mean	Mode	S.D
Relative Advantage	4.64	5	.427
Compatibility	4.58	5	.340
Complexity	4.30	5	.459
Observability	4.76	5	.368
Trialability	4.73	5	.360
Overall	4.60	5	.183

The attributes of innovation were evaluated since this project was considered to be an innovative design teaching and learning process. The attributes of innovation consist of relative advantage (4.64), compatibility (4.58), complexity (4.30), observability (4.76), and trialability (4.73). The results indicated that the experts agreed that the use of PLNs on social networking tools with gamification has all the attributes of innovation in teaching and learning process.

Table 3: Results of design process assessment (Allen, 2012)

Areas of assessment	Mean	Mode	S.D
Preparation Phase	4.91	5	.302
Iterative Design Phase	4.91	5	.302
Iterative Development Phase	4.91	5	.302
Overall	4.91	5	.0

This study implemented the Successive Approximation Model (SAM) as the instructional design process comprises of three phases: the preparation phase, the iterative design phase, and the interactive development phase. The results of the assessment showed that the experts agreed that the design process was very appropriate and accurate, with an overall score of 4.91.

Table 4: Results of teaching and learning process assessment (Smith & Ragan, 1999)

Areas of assessment	Mean	Mode	S.D
Introduction	4.78	5	.384
Body	4.71	5	.317
Conclusion	4.75	5	.354
Assessment	4.67	5	.674
Overall	4.73	5	.041

The evaluation of the teaching and learning process (Smith & Ragan, 1999) includes four processes: introduction, body, conclusion, and assessment. The results revealed that the experts agreed that the teaching and learning process was very appropriate with an overall score of 4.73.

Table 5: Results of assessment of teaching and learning activities using PLNs on social networking tools with gamification in teaching and learning process in the context of the professional experience.

Areas of assessment	Mean	Mode	S.D
Creation	4.76	5	.368
Connection	4.76	5	.368
Cognition	4.75	5	.387
Contribution	4.88	5	.299
Overall	4.79	5	.062

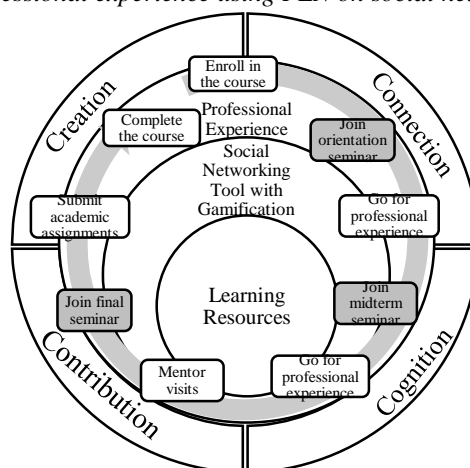
The process of the personal learning network consists of creation, connection, cognition, and contribution. The assessment of teaching and learning activities using PLNs on

social networking tools with gamification demonstrated that the experts agreed that the teaching and learning activities were very appropriate, with an overall score of 4.79. Each area of assessment had a high mean score, as shown above.

4.2 Discussion

The SAM instructional design process was implemented in this study in order to design a teaching and learning process. According to the components of PLN in figure 1, the 4Cs processes of PLN were implemented as learning activities within the learning context of professional experience process from figure 3. These learning activities were performed on the social networking with gamification as the learning tools. The CN is one of the learning tools that allows learners to connect their learning resources including information, people, and networks. The designed process framework is proposed in figure 4.

Figure 4: Process of the professional experience using PLN on social networking tools with gamification



In addition, the addable badges feature in the CN allowed the possibility for designing gamified-learning content. Therefore, the process of PLN was designed as learning activities parallel with the process of professional experience learning utilizing the addable badges gamification features of the CN. In order to receive all the badges, students have to enroll and join the CN by creating their new profile. The students are required to join the three seminars. While they go for their professional experience, the students can participate by using PLN processes or activities in the CN to receive badges. The badges designed for the professional experience are displayed in Table 6.

Table 6: The badges designed for the professional experience

	The Creator		The Male Intern		The Female Intern		The Seminar
	The Connector		The Cognitive Learner		The Contributor		Mentor Visits
	Questionnaire Completion		Professional Experience Completion		Assignments Completion		The Graduates

The results of the evaluation from the eleven experts could be discussed in five areas. First, the results of the standard evaluation in Table 1 indicated a very good program standard. Second, the results of the innovative attributes assessment shown in Table 2 revealed a high level of

observability and trialability, suggesting that the process could be adapted to the similar context in other fields. Although the overall results were very high, it was suggested by some experts that the complexity regarding the use of new social networking tools could be a difficult issue in implementing this process in other fields. In addition, software compatibility with the social networks familiar to most learners could be another obstacle. Third, the results of the design process assessment indicated that the design process was very appropriate and accurate. Fourth, the results of the teaching and learning process assessment in Table 4 revealed that the teaching and learning process using PLNs on social networking tools with gamification for the professional experience has very appropriate processes. However, a few experts suggested that more details of assessment rubrics be indicated, particularly for PLN learning activities assessment. Finally, evaluation of the teaching and learning activities using personal learning network processes revealed that these activities were very appropriate for the professional experience for being comprised of creation, connection, cognition, and contribution on social networking tools with gamification.

5. Conclusion

The purpose of this research aimed to create a new teaching and learning process using PLNs on social networking tools with gamification for the professional experience training course. The methodology of this research included three phases: preparation, iterative design, and iterative development, which are the processes of the SAM instructional design process. The implementation of the processes of PLN included designing learning activities parallel to the process of professional experience learning utilizing the feature of addable badges as part of the gamification process on the social networking tool. Eleven experts were asked to evaluate the designed teaching and learning processes. The findings revealed that the experts agreed that the teaching and learning process using personal learning networks on social networking tools with gamification in the professional experience training course indicated high levels of standard evaluation, innovative attributes, design process, teaching and learning process, and teaching and learning activities. The experts' suggestions for improvement included adding more rubric details to the PLN learning activities assessment.

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