Universal Journal of Educational Research 6(10): 2310-2319, 2018 http://www.hrpub.org
DOI: 10.13189/ujer.2018.061030

Experiential Learning Activities of Technical Students at Higher Education Institutions in Vietnam

Hien. Dang Thi Dieu, Oanh. Duong Thi Kim*

Institute of Technical Education, Ho Chi Minh City University of Technology and Education, Vietnam

Abstract Experiential Learning (EL) is the process of learning through experiences (practice/ experiment/discovery and so on) to develop new skills, attitudes and thinking. EL provides technical students with opportunities to learn actively, relate well to others, emerge theoretical knowledge into practical context to develop their comprehensive competences for a sustainable development. The article refers to a brief overview of experiential learning and types of experiential learning activities as well as a status of participating in experiential learning activities of technical students at higher education institutions in Vietnam. Qualitative (interview) and quantitative (questionnaire) research was applied to identify levels of participating in experiential learning activities of technical students and differences among factors such as school year, gender, learning results with these activities. Results in technical students' perspective indicated that students took part in many EL activities in occasional and low level except two groups of EL activities: do family support, identify problem and make plans reached frequency/often level. Additionally, statistics also show that there are significant differences between variables (School year and Great Point Average) with nearly all the EL activities but only significant differences between male and female students in doing family support activities.

Keywords Experiential Learning, Experiential Learning Activities, Active Learning, Practice Learning

1. Introduction

The development of technical science - technology and the deep effects of the Industrial Revolution 4.0 on human beings and jobs have required a massive transformation in employee skills and training in higher education institutions. This transformation concentrates mainly on the learner and the learning process, in which organizing experiential learning activities concerning with the practical context to develop holistic competences of learners is considered to be a main tendency. However, studying on experiential learning and levels of participating in experiential learning activities of technical students has not drawn much attention of scholars and researchers. So, the article revealed results of types of experiential learning activities and levels of taking part in these activities of 705 technical students at Ho Chi Minh City University of Technology and Education (HCMUTE), Industrial University of Ho Chi Minh City (IUH) and Can Tho University (CTU). These results are scientific bases to design experiential learning activities matching with characteristics of subjects and students to improve the quality of teaching - learning at technical higher education institutions in Vietnam.

2. Outline of Experiential Learning and Experiential Learning Activities

Learning is one of the most fundamental activities of human beings. The perspective of learning by doing, practicing, touching, and so on occurred from the ancient time. Confucius completely believed in solid values of learning by doing through his statement: "Tell me and I will forget, show me and I may remember, involve me and I will understand" [2]. Around 350 BCE, Aristotle also stated the value of learning by doing: "for the things we have to learn before we can do them, we learn by doing them" [3].

In the early decades of the 20th century, Dewey (1938) [4] stressed the important of experience in education. According to Dewey, there is an intimate and necessary relation between the processes of actual experience and education. Based on Dewey's work and along with other notable theorists such as Lewin, Piaget, Rogers, and James, Kolb developed more deeply the modern theory of experiential learning in about 1975. Kolb (1984) [5] believed that learning is the process whereby knowledge is created through the combination of grasping and transforming experience.

Respecting researches on experiential learning of Dewey, Kolb, Silberman, Felicia and Patrick, Beard revealed that the term of "experiential learning" has been identified following two approaches:

- Experiential learning is the process of learning through experience and is more specifically defined as "learning through reflection on doing" (Felicia & Patrick, 2011) [8]. These experiences actively immerse and reflectively engage the inner world of the learner, as a whole person (including physical-bodily, intellectually, emotionally and spiritually) with their intricate 'outer world' of the learning environment (including belonging and doing – in places, spaces, within social, cultural, political context etc.) to create memorable, rich and effective experiences for and of learning" (Bear and Wilson) [1].
- Experiential learning is the participation directly of learners in the learning process to form and develop interpersonal experiences. The learning process consists of various activities such as simulation-based learning, project-based learning, learning games, story-telling, creative play and so on (Silberman) [7].

In brief, experiential learning is the learning process from experiences and participating directly in learning tasks associated with real-world or/and simulation contexts to form and develop new experiences.

Experiential learning activities are stated by Silberman (2006, 2007), Suger & Kostoroski, Ágota Dobos, Schwatz, Burnard [6, 7, 9, 10, 12] can be categorized into group of activities as the following:

- *Observation Activity:* Visual is used mainly by students to get information. Observation in education includes activities such as watching movies, simulations, performances, practical objects.
- *Active learning:* Students join learning activities in a proactive way to discover knowledge. Active learning comprises of group work, learning games, role play, brainstorming, etc.
- *Project-Based Learning or assignment:* Students are encouraged to study in small groups (typically 4-6 students) to deal with practical learning tasks and make prototypes.
- *Practice or hands-on learning:* Practice or hands-on learning activities play very crucial roles in forming and developing academic/professional competences of technical students. These activities are organized in inside and outside classroom, including practice at labs or Computer-Based Simulations; participate in creative competitions, student exchange programme, on the job training, internship and so on.
- *Assessment activity:* Learning results can be assessed by lecturers and/ or students. Students do self-assess and peer-assess their results based on assessment tools like rubrics or checklist. Self and peer-assessment provide students with opportunities to understand more deeply about learning tasks and strengthen their responsibility in studying. Lecturers base on rubrics or checklist and other assessment methods and technique to give feedback for students and assess students' performance as well as knowledge.
- *Experiential learning activity in real-life situations*: Learning is taken place in the class as well as extra-activities in real-life situations. Knowledge is applied in practice and core competences (teamwork, problem-solving, critical thinking, creative thinking, etc.) are also improved when students participate in solving practical tasks in the real-life situation. These experiential learning activities contain family support activity, social activity and extra working activity. With the family support activity, students do the house work or do business with other members of their family. In addition, students join social activities such as do the charity; support disabled children or community activities. Extra working activity helps students make money and have good chances to practice knowledge in practice as well as other core competences.

To develop academic/professional and core competences, technical students do not experience the above activities but also implement capstones or technical projects. These learning activities require technical students to identity problems and make plans to tackle them. So, experiential learning activities for technical students need to have activities of Kolb's Circle of Experiential Learning as well as identifying problems and make plans. Experiential learning activities of Kolb's Circle contain four stages:

- Concrete Experience: Technical students involve in an activity or experience and remember how it felt.
- Reflective Observation: Technical students review/reflect on the experience to get more information or deepen their understanding of the experience.
- Abstract Conceptualization: Technical students generalize their experience to generate new information by identifying rules and patterns and transferring from one context to another.
- Active Experimentation: Technical students actively plan/try out what they have gained in the real context.

In brief, draw the definitions of experiential learning and experiential learning activities inside and outside class, experiential learning activities of technical students are proposed in this paper to identify and judge the participation of them in these activities during the learning process at some technical higher education institutions in Vietnam. This paper proposes experiential learning activities of Vietnamese technical students in the following:

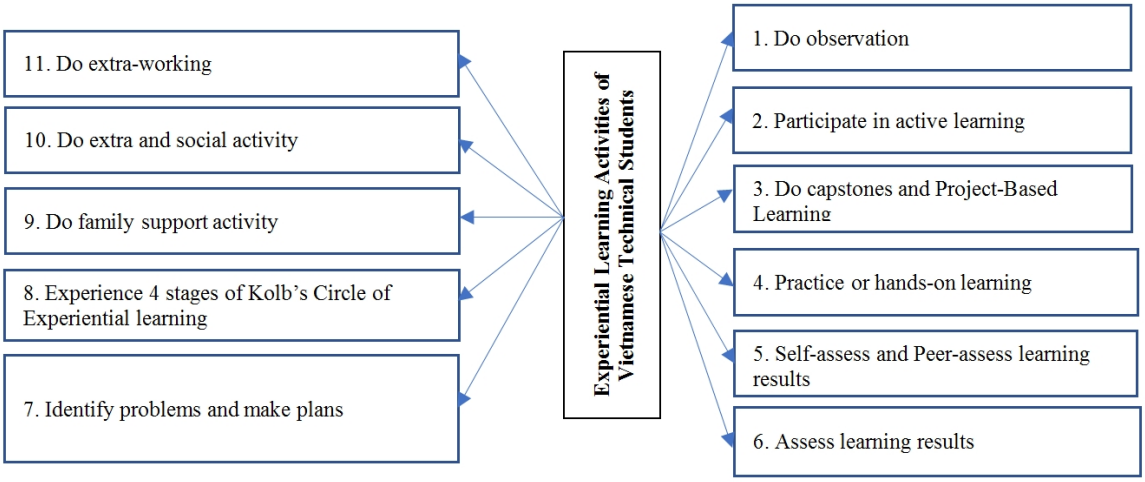

Figure 1. Experiential Learning activities of Vietnamese Technical Student

3. Status of the Participation in Experiential Learning Activities of Technical Students at Higher Education Institutions in Vietnam

3.1. Organizing the Research

The process of researching was divided into three main phases: design questionnaire and conduct a pilot survey, conduct a formal survey and analyze data.

Phase 1: Design questionnaire and conduct a pilot survey

There are five main steps in this phase, including design items of each group of EL activities, select measurement scale, conduct a pilot survey, analyze the Factor analysis (EFA), analyze the 1st Reliability of individual items (Cronbach's Alpha index). Every step will be presented more detail in the following:

Step 1*:* Design a questionnaire

Draw the above outline of experiential learning activities of technical students, EL methodologies/ items in 11 groups of EL activities were developed. Totally, there were 60 items belonging to 11 groups and 4 items related to personal information: university, year of students, gender, grade point average (GPA).

Step 2*:* Select the measurement scale

- Variables were measured on a five-point Likert scale ranging from very low level to very high level. Ranging from 1 to 5: (1) Never, (2) Seldom, (3) Sometime/Occasionally, (4) Often and (5) Very often.
- School year of students: Freshman, Sophomore, Junior, Senior.
- Gender: Male and Female.
- 7 - GPA levels:
  - Level 1: from 0.00 to under 5
  - Level 2: from 5 to under 6
  - Level 3: form 6 to under 6.5
  - Level 4: from 6.5 to under 7.0
  - Level 5: from 7 to 7.5
  - Level 6: from 7.5 to under 8.0
  - Level 7: from 8.0 to 10

Step 3*:* Conduct a pilot survey

The pilot survey was conducted in 97 technical students at Ho Chi Minh City University of Technology and Education (HCMUTE).

Step 4: Analyze the Factor analysis (EFA)

Analyze the Factor analysis was to confirm designed items belonging to suitable factors or not.

Step 5: Analyze the 1st Reliability of individual items

This step was implemented to eliminate inappropriate variables.

After conducting five steps carefully, 48 qualified items were chosen to create the completed questionnaire used in implementing a formal survey.

Phase 2: Conduct a Formal Survey

48 meaningful items and 4 items of demographic in the formal questionnaire were distributed for more than 1000 students of 3 universities in Vietnam, including HCMUTE, IUH and CTU. However, only 705 reliable responses were selected for data analyses.

Phase 3: Analyze Data

SPSS statistical software was used to analyze the 705 valuable responses. The Reliability of individual items analysis was processed one more time. Compute variable in each group of EL activities frequency, mean, ANOVA analyses were used through appropriate statistical package.

3.2. Sample Analyses

705 responses were selected in data analysis, detailed distribution for each variable of the sample shows in the table 1.

Table 1. Sample analysis

Variables	Detail Variables	Frequency	Percent (%)
Universities	HCMUTE	257	*36.5*
	IUH	202	*28.7*
	CTU	246	*34.9*
School year	Freshman	147	*20.9*
	Sophomore	182	*25.8*
	Junior	193	*27.4*
	Senior	183	*26.0*
Gender	Male	597	*84.7*
	Female	108	*15.3*
GPA	< 5.0	15	*2.1*
	5.0 to < 6.0	89	*12.6*
	6.0 to < 6.5	151	*21.4*
	6.5 to < 7.0	192	*27.2*
	7.0 to < 7.5	151	*21.4*
	7.5 to < 8.0	75	*10.6*
	> = 8.0	32	*4.5*
Total		**705**	***100***

- **Universities variables:** Sample distribution among three universities is relatively evenly distributed, 257 (36.5%) students of HCMUTE, 202 students (28.7%) of IUH and 245 students (34.9%) of CTU.
- **School years:** Sample distribution among four school years is not so different. There are 20.9% of freshman, 25.8% of sophomore, 27.4% of junior and 26% of senior respectively.
- **Gender:** Most of participants are male with 84.7% comparing with 15.3% female students.
- **Grade Point Average (GPA):** The percentage of students having GPA (10 scales) under 5.0, from 5.0 to 6.0, from 6.0 to 6.5, from 6.5 to 7.0, 7.0 to 7.5, from 7.5 to 8.0 and over 8.0 are 2.1%, 12,6%, 21.4%, 27.2%, 21.4%, 10.6%, 4.5% respectively.

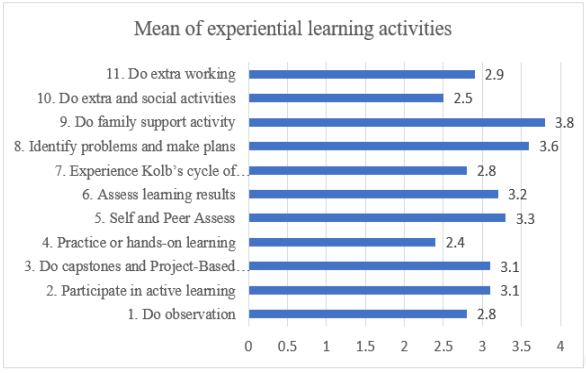

Figure 2. Mean of main experiential learning activities

3.3. Scale Analysis Reliability

Cronbach's Alpha (α) is a measure of internal consistency of a set of items in one group. It is considered to be a measure of scale reliability. Cronbach's Alpha is a coefficient of reliability (or consistency). If Corrected Item-Total Correlation > 0.3 and Cronbach's Alpha > 0.6, the scale is acceptable. A commonly accepted rule for describing internal consistency using Cronbach's alpha is as follows: $0.9 \leq \alpha$: excellent; $0.8 \leq \alpha < 0.9$: good; $0.7 \leq \alpha < 0.8$: acceptable; $0.6 \leq \alpha < 0.7$: questionable; $0.5 \leq \alpha < 0.6$: poor and $\alpha < 0.5$: unacceptable [13].

In general, results in table 2 indicated that all Cronbach's Alpha > 0.6 and corrected item - total correlation > 0.3, so all 48 items of 11 indicators are acceptable. The items in each group will be computed into a new variable representing of main EL activities.

3.4. Results of Participating In Experiential Activities of Technical Students

3.4.1. Status of Main Learning Experiential Activities

The bar chart illustrates the Mean of 11 main EL activities of 705 technical students from three universities in Vietnam. Overall, levels of participation in the 11 EL activities were unequally, the highest level as in frequency level of average Likert scale[1] belong to "do family support activity" (Mean = 3.8), while the lowest Mean was in low level (Mean = 2.4), related to "practice or hand-on learning" activities. There were 74.8% students doing family support activities compared to 42.7% students practising or hands-on activities.

Beside activities of family support, "identify problem and make plans" was the second activities reached frequency level (Mean = 3.6). There were 72.1% students identifying problems and making plans when they studied.

Four in eleven activities such as "do assignment or Project-Based Learning", "participate in active leaning", "self and peer assess", "assess learning results" were in the occasional level (Mean from 3.1 to 3.3 respectively). There were from 62.4% to 65.1% students doing these activities.

Three other activities also reached the occasional level, but Mean was lower than four activities above (Mean from 2.8 to 2.9), including "do observation", "Experience Kolb's cycle of experiential learning" and "do extra-working". More than a half of students did these activities in their learning process.

There were only two activities gaining the low level with Mean from 2.4 to 2.5. 47.2% students practiced learning activities and 49.3% did social activities.

These results revealed that technical students less took part in experiential learning activities which are directly associated with learning in and outside class compared to other activities engaged indirectly with experiential learning.

1 Note: for Likert average scale: Mean = 1 to 1.8 is in very low level/never; Mean = 1.81 to 2.6 is in low /Seldom level; Mean = 2.61 to 3.4 is in average/occasional/sometime level; Mean = 3.41 to 4.2 is high/ frequency/often level; Mean = 4.21 to 5 is very high/very frequency/very often level.

Table 2. Cronbach's Alpha analysis result of experiential learning activities

Main Experiential Learning activities	Detail Experiential Learning activities/ Items	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Do observation Alpha = 0.73	• Students watch films relating to learning contents	.477	.699
	• Students watch simulations relating to learning contents	.633	.609
	• Students watch demonstrations	.578	.640
2. Participate in active learning Alpha = 0.	• Students do fields trips	.419	.734
	• Small groups discuss to acquire new knowledge.	.572	.760
	• Small groups discuss about ways of doing assignments	.625	.750
	• Small group discuss ways of solving learning tasks	.606	.755
	• Students raise questions and answer	.511	.771
	• Small groups take part in seminars	.549	.765
	• Students relate well to others to solve learning tasks through learning games	.436	.788
	• Students learn through role play	.410	.792
3. Do assignment or Project-Based learning Alpha = 0.74	• Small groups apply knowledge in practice to make practical prototypes	.537	.685
	• Small groups do capstones	.615	.592
	• Small groups or individual do learning projects.	.539	.680
4. Practice or hands-on learning Alpha = 0.83	• Students participate in creative competitions	.579	.803
	• Students participate in internship programs	.552	.808
	• Students practice at Labs	.409	.842
	• Students participate in Simulation-Based Learning	.670	.783
	• Students practice in companies	.699	.777
	• Students do on the job training	.701	.778
5. Self and Peer Assess Alpha = 0.81	• Students self - assess individual's results	.550	.832
	• Students self - assess teamwork's results	.721	.658
	• Students peer-assess results of individual and teamwork	.692	.689
6. Assess learning results Alpha = 0.78	• Students get feedback from lecturers and response	.621	.692
	• Students get feedback of groups and other individuals and response	.668	.638
	• Students get feedback from rubrics or checklists and self-regulate	.555	.762
7. Experience Kolb's EL cycle Alpha = 0.80	• Students do reflective observation what have been done	.618	.760
	• Students do abstract conceptualization from what have been reflective observation	.705	.669
	• Students do active experimentation	.622	.756
8. Identify problems and make plans Alpha = 8.06	• Students identify problem	.654	.734
	• Students propose solutions	.698	.691
	• Students make plans to implement solutions	.616	.781
9. Do family support activity Alpha = 0.78	• Students do the housework	.598	.728
	• Students do works relating to family	.534	.766
	• Students run activities making money for their family	.674	.689
	• Students help members of their family	.569	.742
10. Do extra and social activities Alpha = 0.83	• Students participate in Youth union clubs	.545	.818
	• Students participate in skill clubs	.657	.796
	• Students participate in green summer program and/or other volunteer activities	.606	.806
	• Students participate in Sport/Musician clubs	.571	.815
	• Students participate in speaking/ presentation/ communication clubs	.632	.802
	• Students participate in community activities	.634	.801
11. Do extra working Alpha = 0.86	• Students do part-time	.663	.838
	• Students do extra-working relating to learning field	.384	.882
	• Students do extra-working relating to develop communication skills	.759	.820
	• Students do extra-working relating to developing teamwork skill	.699	.831
	• Students do extra-working relating to green-color workers	.693	.832
	• Students do extra-working relating to developing problem-solving skill	.737	.823

Table 3. Percentage of Experiential Learning activities

Main EL activities	Detail Experiential Learning activities/ Items	Percent (%)					*Average Total*
		Never	Rarely	Occasionally	Often	Very often	
1. Do observation	Students watch films relating to learning contents	11.9	22.6	39.1	21.1	5.2	*57.0*
	Students watch simulations relating to learning contents	10.9	21.6	37.2	23.7	6.7	*58.8*
	Students watch demonstrations	10.9	21.7	34.0	24.8	8.5	*59.6*
	Students go to fields trips	29.2	25.7	30.8	9.6	4.7	*47.0*
	Average	**15.7**	**22.9**	**35.3**	**19.8**	**6.3**	***55.6***
2. Participate in active learning	Small groups discuss to acquire new knowledge.	4.7	16.2	36.3	34.8	8.1	*65.1*
	Small groups discuss about ways of doing assignments	3.1	11.2	33.3	41.6	10.8	*69.2*
	Small group discuss ways of solving learning tasks	1.7	11.5	37.9	39.0	9.9	*68.8*
	Students raise questions and answer	2.1	15.3	40.4	31.8	10.4	*66.6*
	Small groups take part in seminars	1.7	16.2	37.9	34.3	9.9	*66.9*
	Students relate well to others to solve learning tasks through learning games	8.8	24.5	36.9	20.7	9.1	*59.4*
	Students learn through role play	32.9	33.9	21.8	8.9	2.4	*42.7*
	Average	**7.9**	**18.4**	**34.9**	**30.2**	**8.7**	***62.7***
3. Do assignment and Project-Based Learning	Small groups to solve real problems/ situations	10.6	20.6	31.6	27.1	10.1	*61.1*
	Small groups do complex assignment	7.9	16.9	32.9	32.6	9.6	*63.8*
	Small groups or individual do learning projects.	7.7	19.6	35.2	27.9	9.6	*62.4*
	Average	**8.7**	**19.0**	**33.2**	**29.2**	**9.8**	***62.4***
4. Practice or hands-on learning	Students participate in creative competitions	30.8	29.8	24.8	11.1	3.5	*45.3*
	Students participate in internship programs	37.6	27.8	21.3	9.9	3.4	*42.7*
	Students practice at Labs	16.6	10.4	22.6	31.1	19.4	*65.3*
	Students participate in Simulation-Based Learning	30.8	23.5	25.1	14.0	6.5	*48.3*
	Students practice in companies	52.9	17.2	15.7	9.5	4.7	*39.2*
	Students do on the job training	43.0	22.3	20.7	11.1	3.0	*41.8*
	Average	**35.3**	**21.8**	**21.7**	**14.5**	**6.8**	***47.2***
5. Self and Peer Assess	Students self - assess individual's results	3.4	12.5	33.9	39.7	10.5	*68.3*
	Students self - assess teamwork's results	4.8	19.7	34.0	33.5	7.9	*63.9*
	Students peer-assess results of individual and teamwork	6.2	19.4	34.3	31.6	8.4	*63.3*
	Average	**4.8**	**17.2**	**34.1**	**34.9**	**8.9**	***65.1***
6. Assess learning results	Students get feedback from lectures and response	8.1	17.4	34.0	27.9	12.5	*63.8*
	Students get feedback of groups and other individuals and response	9.5	15.3	33.6	29.5	12.1	*63.9*
	Students get feedback from rubrics or checklists and self-regulate	9.1	16.5	33.8	29.4	11.3	*63.5*
	Average	**8.9**	**16.4**	**33.8**	**28.9**	**12.0**	***63.7***
7. Experience Kolb's EL cycle	Students do reflective observation what have been done	17.0	27.0	34.9	17.2	4.0	*52.9*
	Students do abstract conceptualization from what have been reflective observation	11.9	27.0	35.6	20.6	5.0	*56.0*
	Students do active experimentation	9.5	21.8	37.9	24.3	6.5	*59.3*
	Average	**12.8**	**25.3**	**36.1**	**20.7**	**5.2**	***56.1***
8. Identify problems and make plans	Students identify problem	1.4	7.7	29.8	46.4	14.8	*73.2*
	Students propose solutions	1.1	7.7	29.8	46.8	14.6	*73.2*
	Students make plans to implement solutions	2.7	12.9	30.8	39.6	14.0	*69.9*
	Average	**1.7**	**9.4**	**30.1**	**44.3**	**14.5**	***72.1***
9. Do family support	Students do the housework	1.6	3.7	20.1	42.4	32.2	*80.0*
	Students do works relating to family	3.1	14.3	32.2	32.5	17.7	*69.4*

activity	Students run activities making money for their family	1.3	9.8	30.1	40.7	18.2	*73.0*
	Students help members of their family	1.1	5.5	26.1	40.9	26.4	*77.2*
	Average	**1.8**	**8.3**	**27.1**	**39.1**	**23.6**	***74.8***
10. Do extra and social activities	Students participate in Youth union clubs	15.2	26.2	33.5	16.7	8.4	*55.4*
	Students participate in skill clubs	28.2	29.1	26.7	12.2	3.7	*46.8*
	Students participate in green summer program and/or other volunteer activities	29.8	24.4	28.9	13.0	3.8	*47.3*
	Students participate in Sport/Musician clubs	25.2	22.6	25.8	16.6	9.8	*52.6*
	Students participate in speaking/ presentation/ communication clubs	46.7	26.5	16.2	7.8	2.7	*38.6*
	Students participate in community activities	21.0	21.4	28.4	20.4	8.8	*54.9*
	Average	**27.7**	**25.0**	**26.6**	**14.5**	**6.2**	***49.3***
11. Do extra working	Students do part-time	20.6	12.9	30.5	21.6	14.5	*59.4*
	Students do extra-working relating to learning field	49.2	18.3	15.7	12.5	4.3	*40.9*
	Students do extra-working relating to develop communication skills	21.7	9.9	23.0	32.2	13.2	*61.1*
	Students do extra-working relating to developing teamwork skill	28.2	14.0	23.7	24.8	9.2	*54.5*
	Students do extra-working relating to green-color workers	21.1	7.5	19.0	34.3	18.0	*64.1*
	Students do extra-working relating to developing problem-solving skill	19.7	11.5	22.0	29.2	17.6	*62.7*
	Average	**26.8**	**12.4**	**22.3**	**25.8**	**12.8**	***57.1***

3.4.2. Status of Detailed Learning Experiential Activities

Statistics in the table 3 shows that technical student' participations in experiential learning activities are very diversity with every level from never, rarely, occasionally, often and very often. Overall, technical students selected occasional level with the highest rate while only a small number of students chose very often level in nearly all activities, except "practice or hands on learning field", "identify problems and make plans", "do extra and social activities" and "do extra working".

The participation of technical students in each action of main experiential learning activities will be analyzed as below.

Students participated in all four activities of "do observation" at the often and very often level with the very low percentage. There were only from 30% to 39% students taking part in these activities at the occasional level. 54.9% students never and rarely did go to fields trips compared with from 32% to 34% students watching demonstrations and simulations and films. In short, technical students do less observation in the learning process. The relationship between knowledge and practice via observation in the practical context was implemented less by students in the learning process.

"Participate in active learning" such as discuss ways of doing assignments or solving learning tasks, raise questions, take part in seminars, learn through playing games or role play is one of a very significant experiential learning activity in higher education. Only 8.9% and 20.7% students often learn through playing games and role play. There were 31.8% to 41% students often participated in remaining activities of this main experiential learning activity. The rate of students never took part in learning through games and role play reaching at about 33% and a little bit over. These results indicated that students were provided more opportunities to discuss, speak or listen to others in learning rather than do or experience.

There were not significant differences of percentages in the same level among indicators of "Do assignment and Project-Based Learning" activity. 8.7% students never and 19% students rarely did this activity. About 30% students often and 10% students very often participated in this activity. These statistics revealed that complex assignments and learning projects seem not to be immersed regularly in training curriculums. In order to develop professional and core competence of technical students, technical higher education institutions should develop Project-Based Learning and Curriculums. Learning projects also should be integrated into knowledge and practice to provide students with opportunities to experience throughout the entire learning process.

"Practice or hands-on learning" is one of main experiential learning activity. Students do practice in companies or at labs or on the job training as well as participate in creative competitions/ internship programmes/simulation-based learning. Students very did these activities at the very often and often levels with the very lower rate than never and rarely levels. There were only 6.8% students very often and 14.5% often compared to 35.8% students never and 21.8% students rarely participating in these activities. Only 'practice at Labs' in six indicators of this main activity reached up to 22,6% students at the occasional level and 31.1% responded in often level and 19.4% was in very often level. This statistic

indicated that technical students concentrated on practicing at Labs much more than in a practical learning environment. Thus, it is difficult for students to engage theoretical knowledge with practical contexts to develop their professional competence.

The percentage of all three indicators of the "Self and Peer Assess" activity at the occasional and often was sharply higher than the never/rarely and very often levels. About 70% students occasionally and often do self-assess and peer assess individual's as well as teamwork's results when conducting tasks, but still about 20% of students worked without or rarely test work's results.

28.9% students often did "Assess learning results" activity in the learning process by responding to feedbacks from their lecturers and classmates. Nearly 34% students participated occasionally in these activities. There were 16.4% and 8.9% students rarely and never joined in them.

With "Experience Kolb's cycle of experiential learning" activity, totally about 70% students engaged in stage of Kolb's cycle "do active experimentation" in three levels occasionally, often and very often, while the two stages "do abstract conceptualization from what have been reflective observation" and "do reflective observation what have been done" reached about 60%. These results pointed that these activities were not organized regularly to support students to develop their ability of generalizing theory from what they have experienced. So, it will be hard for students refine their generalizing skills.

All indicators of "Identify problems and make plans" activity obtained the sharply higher percentages at the often level compared with other levels. 44.3% students often and 14.5% very often identified problem, proposed solutions and made plans to implement solutions. Only 1.7% students never and 9.4% students rarely did these activities.

The result of "Do family support activity" activity revealed that all indicators gained at the often and very often level higher than remaining levels. In these indicators, 74.6% students often and very often did do the housework and 67.3% students helped members of their family compared with 58.9% students run activities making money for their family and 50.2% students did works relating to family. Students never and rarely did these activities with very low percentages.

Overall, students attended in social activities at the average and the low ratio. In those indicators, they tended to 'participate in Youth union clubs' (average = 55.4%), 'participate in Sport/Musician clubs' (average = 52.6%), and 'participate in community activities' (average = 54.9%) were higher rate when compared to other indicators, including "participate in skill clubs" (average = 46.8%), "participate in green summer program and/or other volunteer activities" (average =47.3%), "participate in speaking/ presentation/ communication clubs" (average = 38.6%). In general, about 40 to 50% students never or rarely took part in social activities. Students' interviews revealed that students were not interested in social activities although universities had these activities. If students are not involved in social activities during their student time, it could be very difficult for them to develop community services in the future.

Generally, students had extra jobs in average level. Further frequency statistic showed that 20.6% of students did not do part-time job, 12.9% rarely did extra-working, 30.1% sometimes went to do part-time job, 21.6% often took extra works and 14.5% very often had extra work. Characteristics of their works usually repeated, related to communication, worked in group or solving problem but not professional relation.

To sum up, all the figures showed the entire picture of participation of technical students in Vietnam in variety of experiential learning activities. The percentage of students joining in experiential learning activities involved directly with developing their professional competence are lower than the percentage of students participating in other experiential learning activities linked indirectly.

3.4.3. Analyzes Differences of Factors with Main EL Activities

The ANOVA analyses were processed to find out the differences each factor (school year, gender and GPA) with the 11 main EL activities, if Sig. values in ANOVA analysis is < 0.05, it means there are significant difference between two factors that need to be tested; if Sig. values > 0.05 means there are not significant difference between two factors that need to be tested.

Table 4. ANOVA analyses of factors: school year, university, gender, and GPA with main EL activities

Main learning experiential activities(1)	Sig.		
	School year (2)	Gender (3)	GPA (4)
1. Do observation	.000	.975	.001
2. Participate in active learning	.000	.213	.000
3. Do capstones and Project-Based Learning	.000	.091	.000
4. Practice or hands-on learning	.000	.254	.031
5. Self and Peer Assess	.029	.092	.034
6. Assess learning results	.001	.896	.100
7. Experience Kolb's cycle of experiential learning	.022	.382	.014
8. Identify problems and make plans	.000	.740	.008
9. Do family support activity	.001	.011	.212
10. Do extra and social activities	.002	.043	.761
11. Do extra working	.000	.926	.030

All Sig. values in column (2) of the table 4 are < 0.05, so there are significant differences among the first, second, third and fourth year students with 11 main EL activities mentioned in the research. Furthermore, the descriptive

analysis of all factors shows that in the general trend, the older students the more EL activities they involved.

Results of all Sig. values in column (3) of the table 4 are > 0.05, exclude Sig. values of activity of doing family support factor = 0.11 < 0.05. Thus, there is significant difference between male and female students' experience in doing housework, but not significant differences between boy and girl with the other factors. The different trend is that female students have done more housework than male students.

Figures in column (4) of the table 4 indicate that Sig. values of three factors: assess learning results, do family support activity, and do extra and social activities = .100, .212, .761 respectively > 0.05, and Sig. values of the eight other factors < 0.05. In consequence, there are significant differences among students who have achieved high and low GPA with the experience relevant to eight factors: do observation, participate in active learning, do capstones and project-based learning, practice or hands-on learning, self and peer assess, experience Kolb's cycle of experiential learning, identify problems and make plans, do extra working but not significant differences with the three other factors. Generally, the detail descriptive statistics illustrates that trends of all significant distinction factors, except do extra working factor, are the less the students' participation in EL activities, the lower the GPA they achieved. However, in the do extra work activities, students got GPA < 6.0 and > 7.5 had extra work less than those who had GPA between 6.0 and 7.5.

The above descriptions revealed some issues in the following:

Firstly, it can be inferred that there is a gender equality in participating in EL activities at technical universities in Vietnam because no significant differences between male and female students in most of the EL activities, except "do family support activity". In other word, male and female students have equal educational opportunities in technology fields, which is more common fields for men than women. However, in their families, female students probably seem to do more housework than male students. Deeply interviewing some groups of students about perspective of doing housework, many male students shared that they were not forced to do housework because of a very traditional opinion of their parents. They believed that doing housework is the responsibility of female.

Secondly, participation in EL activities have developed over the student years because there are the significant differences in academic student years with the 11 groups of EL activities. It can be underattended that the accumulation of experience of first year students are lower than fourth year students. This result is consistent with the design of training syllabus and curriculum at technical universities because in each subject, EL activities were designed for students to understand and apply new theories in simulation and real environments. In addition, beside EL activities in subjects, universities have organized other EL activities such as technical contests, projects, practicing in workshop or real situations, etc. Therefore, students in the latter years had more opportunities to participate in EL activities than students in previous years.

Finally, according to the ANOVA analysis results of GPA with the EL activities, it could be inferred that students' GPA depends on their involvements in personal activities that relevant to learning, does not depend on participation in social and housework as well as teacher evaluation activities. For that reasons, if students want to achieve high grade, they should intend more EL activities that be relevant to learning content. However, the levels of involvement in the mentioned EL activities of technical students in Vietnam are not so high, many groups of activities are in average and low level. Some final year students revealed that they were only provided opportunities with EL activities in practical subjects. In additional, they did do field trips only three or four times from the first to the final year.

Thus, we have suggested that teachers and universities should organize more EL activities in technical training programs and encourage students to take part in to develop students' learning results and abilities. The following activities should more focus on a variety of activities such as do observation, participate in active learning, do assignment and project-based learning, practice or hands-on learning, self and peer assess, experience Kolb's cycle of experiential learning, identify problems and make plans, do extra working.

4. Conclusions

In the trend of shifting from "Teacher-Centered Approach" to "Student-Centered Approach" to reform the education quality in higher education in Vietnam, organizing EL activities enhance students to actively participate in learning seems to be a main tendency. Their comprehensive competences (professional and core competences) will be developed during the experiential learning process.

This study has been implemented not only to identify the participation in EL activities of technical students in Vietnam but also state meaningful differences between these activities and various factors such as years of school, gender and GPA.

The statistical analyses indicated that, the participation in EL activities of technical students in Vietnam were in various levels (from seldom level to occasional and frequent level). The percentage of students often participated in EL activities involving directly with developing students' competence such as "participate in active learning" or "do assignment and project - based learning" lower compared to EL activities linking indirectly, including "do family support", "identify problem and make plans". There are significant differences

among factors, including gender, years of school and GPA with the participation in EL activities. The difference on "gender" is the least compared to the "years of school" and "GPA".

The status reveals that the more students take part in EL activities which are relevant directly to developing their competence, the more they get higher academic results. Two main causes can be inferred to make the low rate of students' participation in experiential learning activities. Firstly, it could be due to lecturers and training curriculums have not much concentrated on designing EL activities when implementing the training programs, so students do not provide good opportunities to experience. Secondly, lecturers have organized EL activities for students, but they were still not suitable with students. So, EL activities should be immersed in the Project-Based Learning and Curriculum, including doing observation, participating in active learning, doing assignment and project-based learning, practicing or hands-on learning, self and peer assessing, experiencing Kolb's cycle of experiential learning, identifying problems and making plans, doing extra working. Students should be encouraged to take part in these activities throughout the entire learning process. The participation of students actively will be help students achieve better academic results as well as develop their competencies to meet requirements of labor market in the near future.

To improve students' participation in experiential learning activities, further researches should be focus on:

- Redesigning Project -Based Learning and Curriculum.
- Integrating EL activities into Project -Based Learning and Curriculum.
- Designing and organizing EL activities more relevant to technical students and their learning in and outside classroom.

Acknowledgements

We are very grateful to express our sincerely thanks to friends, lecturers and students at HCMUTE, IUH, CTU who spent valuable time to help us conduct this survey.

REFERENCES

[1] Beard C., John P Wilson, Experiential Learning: A Best Practice Handbook for Educators and Trainers, London and Philadelphia, United Kingdom and USA, 2006.

[2] https://www.goodreads.com/quotes/661227-tell-me-and-i-will-forget-show-me-and-i

[3] https://www.goodreads.com/quotes/4184-for-the-things-we-have-to-learn-before-we-can

[4] Dewey, J., Experience and Education, New York: Touchstone, 1938.

[5] Kolb David, Experiential learning: experience as the source of learning and Development, Englewood Cliffs, NJ: Prentice Hall, 1984.

[6] Mel Silberman, Active Training: A Handbook of Techniques, Designs, Case Examples, and Tips (Third Edition), Pfeiffer, San Francisco, 2006.

[7] Mel Silberman (edited), The Hand book of Experiential learning, Pfeiffer, San Francisco, 2007.

[8] Felicia and Patrick, Handbook of Research on Improving Learning and Motivation. p. 1003.ISBN 1609604962, 2011.

[9] Sreve Suger and Kim Kostoroski Suger (2002), Primary games: Experiential Learning Activities for Teaching Children K-8, Jossey-Bass, USA.

[10] Ágota Dobos, PhD, Experiential learning for professional development in the civil service, Procedia – Social and Behavioral Sciences, 116 (2014), p. 5085 – 5090, 2014.

[11] Michelle Schwatz, Best Practices in Experiential learning, The learning and teaching office.

[12] Philip Burnard (1989), Teaching Interpersonal Skill: A handbook of experiential learning for heath professionals, Springer-Science+Business Media, B.V, 1989.

[13] Cortina, J.M, "What is coefficient alpha? An examination of theory and applications", Journal of Applied Psychology. 78: 98–104. doi:10.1037/0021-9010.78.1.98, 1993.