International Education Studies and Sustainability
ISSN 2766-4554 (Print) ISSN 2766-4562 (Online)
Vol. 2, No. 2, 2022
www.scholink.org/ojs/index.phi/iess

Original Paper

Applying Self-Directed Learning in Teaching Technical Drawing: Results of a Study in Real Situation at Universities of Technology and Education

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Received: September 6, 2022 Accepted: October 15, 2022 Online Published: October 19, 2022

doi:10.22158/iess.v2n2p29 URL: http://dx.doi.org/10.22158/iess.v2n2p29

Abstract

Teaching based on self-directed learning is considered a teaching perspective that focuses the teaching process on learners' learning activities, helping learners to increase their active, positive and self-discipline in learning, to meet the requirements of lifelong learning. The characteristics of teaching technical drawing at universities require very high self-study in students, from determining learning goals to determining the learning process and ways to achieve results of the highest learning. By the method of quantitative research through survey and analysis of the current situation, the article presents the results of analysis and assessment of the current situation of applying self-directed learning in teaching technical drawing at Universities of Technology and Education and analysis and assessment of advantages and disadvantages of applying self-directed learning in teaching Technical Drawing subject. Content of the survey, analysis and assessment of the current situation based on the learning content characteristics of technical drawing subject, self-directed learning characteristics for students in the university, including: the actual situation of goal setting study; status of students' choice of content, methods and forms of learning. The results of practical research are the scientific basis for assessing students' self-directed learning ability and the ability to apply self-directed learning in teaching practice in Universities of Technology and Education in Vietnam, meeting the requirements of lifelong learning for learners.

Keywords

Self-directed learning, Teaching Technical Drawing subject, University of Technology and Education

1. Introduction

The world is starting to enter an industrial revolution 4.0, promising an innovation for all professions, creating a huge change in socio-economic life and this is also the opportunity and challenges for the education sector in general and methods for teaching at universities in particular, this requires adjustments to train human resources that are integrated and capable of meeting new standards (Rana Riad K. AL-Taie, 2016).

Self-directed learning is active, self-disciplined and positive at high level of learners. Learners carry out the learning process according to their own goals, directions and plans. The self-directed learning process helps form and train learners' self-directed ability. Self-directed learning is very suitable for application in training at university to meet the goal of personalizing the teaching process and enabling learners to practice useful skills for self-study and lifelong learning (Knowles, 1962). Self-directed learning has been applied by many countries around the world in learning programs for adults, university students, graduate students or apprentices. The annual international conference on self-directed learning has introduced many projects and researches on self-directed learning. Currently, researchers around the world are trying to develop theories of self-directed learning. In Vietnam, self-directed learning has not yet been noticed in teaching theory in general and in the process of teaching students in a group of technical majors in particular.

With the goal of assessing the actual situation of applying self-directed learning in teaching Technical drawing subject, serving as a scientific basis for assessing students' self-directed learning ability and the ability to apply self-directed learning in teaching practice in Vietnam, meeting lifelong learning requirements for learners. The article presents the results of survey, analysis and assessment of the current situation of teaching Technical Drawing subject at Universities of Technology and Education in Vietnam according to self-directed learning. The content of the survey and assessment of the current situation includes: identifying goals, selecting content, methods and forms in learning of students.

2. Method

2.1 Theoretical Basis

Self-directed learning is not a completely new thing for higher education, which has a history of more than 150 years of establishing theoretical foundation about 65 years ago (Hiemstra, 1994). The term "self-directed learning" or " direction for learning by yourselves " is used to distinguish it from teachers direct learning that is a form of teaching or a teaching method in which learners determine their own learning goals to draw up a study and research plan. This method is considered to have begun to take shape in the second half of the twentieth century. Malcolm Shepherd Knowles (1913-1997), Director of Association Education for Adults in US, who had a great impact on American education in the second half of the twentieth century, Knowles published Self-Directed Learning (1975). This work is said to have initiated and founded the Theory of Adult Learning with the original implication to oppose the term "pedagogy"—it is teaching of children (Knowles, 1975). According to him, programs need to focus more

on process, interaction and direct penetration than on the development of content. More interactive and active teaching methods will be used: survey for situation, role-playing, games, simulations or self-assessments. These methods are basically designed based on practical problems, how to solve them by using the content of the subject. Through practical experience, learners build their own knowledge, measure their own results, and learners themselves are responsible for their own learning. He believes that learning of adult (or in other words, program for training adult) should be built on the following principles:

• Self-directed;

• Experience;

• Readiness to learn;

• Learning orientation;

• Motivation to learn.

Currently, Knowles' theory is that the inherited methods have contributed to increasing the effectiveness of formal courses in universities around the world. Self-directed learning is a process by which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human resources and materials to learn, implementing appropriate learning strategies, and evaluating learning outcomes. Training methods change in the direction of focusing on learning (instead of teaching), personalizing the learning process, diversifying learning methods with the enhancement of online learning, learning through experience with the environment and virtual devices. The fundamental reform of teaching and learning is an urgent requirement. The changes that we can make immediately are teaching methods. It is necessary to move from transmitting pure knowledge to forming qualities and developing learners' capacity; change from quantity of lecturerss to quality of lecturers, promote creativity, inspire personal potential, build self-study ability, improve knowledge by yourselves and practice skills. Here, the lecturersr is not only the one who leads the students in accessing and acquiring knowledge, but also the one who inspires and builds the self-study method. To do that, a teacher must be an example in training, have both "heart" and "reach" to convince learners when approaching the subject, have passion in work, and spread responsible spirit, really teaching with enthusiasm and heart.

Experiencing the training process in a university environment to create people with expertise, skills and knowledge to live, survive, have personality and work effectively, thereby demonstrating their own capacity and contribute to society. Graduates must be able to adapt and be creative in all circumstances, when the environment and society are constantly changing. The knowledge students gather from the process of studying in lecturers halls and libraries will quickly become obsolete. Therefore, it is extremely necessary and important to create self-directed orientation and bulding learning methods by yourselves for students.

Regarding self-directed learning strategies, in 2004 Tracy Thompson and Sherry Wulff implemented the Guided Self-Directed Learning Strategy in intermediate and advanced chemistry courses. Project of

researching this action, based on instructor-observed learning problems, is connected to students' self-directed skills. Preliminary findings suggest that the systematic implementation of self-directed learning strategies with focusing on teaching has solid potential to support student development as a autonomy learners and to enhance the teaching environment (Tracy Thompson & Sherry Wulff, 2004).

Regarding self-directed learning styles, in 2013, Abdel-Hady El-Gilany, Fawzia El Sayed Abusaad studied Self-directed Learning Readiness and Learning Styles of Saudi Arabian University Nursing (Abdel-Hady El-Gilany & Fawzia El Sayed Abusaad, 2013). This study was conducted to determine the readiness of nursing students in Saudi Arabia for self-directed learning; to identify their learning styles and find connections between these two concepts. The high level of self-directed learning and the converging learning style that prevails among nursing students. This will have positive signification for their continuing nursing learning after working in their field.

In 2018, Tim Piper, Thomas Smith, Jorge Jeria, Robert Intrieri, studied Developing Self-Directed Learning Scales for Exercise. Development and scoring of the Self-Directed Exercise Scale. The self-directed learning tool for the exercise scale was tested on 368 self-directed exercisers and 217 new exercise people. Scores from the tool show a high degree of valid support and predictability for classifying practitioners. The aim of this study was to develop and provide robust evidence for scores from a measure of self-directed learning in exercisers. The tool developed for this study will be called the Self-Directed Learning Task Scale (Tim Piper, Thomas Smith, Jorge Jeria & Robert Intrieri, 2018).

Research on self-directed learning for doctoral students, in 2020, Porter, Tracy H.; Rathert, Cheryl; Lawong, Diane A. devoted themselves to self-directed learning research: Lessons for assessing experience of doctoral student. This research has a number of significance for doctoral students, teaching advisors, and universities. First, it is the only study that applies self-directed learning at the doctoral level and is therefore added to the document on self-directed learning. Second, these results provide a potential approach that university leaders may want to consider for their doctoral programs (Porter, Tracy H.; Rathert, Cheryl, & Lawong, Diane A, 2020).

In recent years, self-directed learning and application of self-directed learning in teaching have also been interested in research in Vietnam. Although this research direction is relatively new. However, initially, the authors also have remarkable results that can be implemented into practice. In 2016, Nguyen Thi Cam Van in the study "Teaching according to self-directed learning theory in training home economics teachers" said that self-directed learning is a highly active activity of learners throughout the entire learning process. From their own needs, interests and learning conditions, learners actively determine learning methods, develop learning plans, implement plans and evaluate learning results (Nguyen Thi Cam Van, 2016). Thereby, self-directed learning is a high-level active learning process of learners right from the early stages of determining the direction and strategy for learning. In 2017, the authors Truong Minh Tri, Bui Van Hong & Vo Thi Xuan also studied the application of self-directed learning approach in technical teaching at Ho Chi Minh City University of Technology and Education. In this study, the authors have proposed a model and teaching process according to a self-directed learning approach and

applied in teaching Technical Drawing (Truong Minh Tri, Bui Van Hong & Vo Thi Xuan, 2017). Inheriting this research result, in 2018, the authors researched students' self-directed learning ability and conducted a survey, analysis and assessment of the current situation of students' self-directed learning ability. Student at the Ho Chi Minh City University of Technology and Education (Truong Minh Tri, Bui Van Hong & Vo Thi Xuan, 2018). Research results show that students have self-directed learning ability and teachers can apply this form of learning in teaching activities. Also in the direction of researching applying self-directed learning in teaching, Truong Minh Tri & Bui Van Hong have carried out a number of studies on proposing application processes and teaching processes for each specific learning content in teaching Technical Drawing subject. Research results have shown that the self-directed teaching and learning process is when learners and lecturers discuss to come up with an action plan and decide what content to learn in accordance with the immediate goals, long-term goal (Bui Van Hong & Truong Minh Tri, 2021). The purpose of the lecturersr is to meet the actual needs of the learners. This method is very suitable for developing human learning skills such as: creative and reseach skills, independent in skills about scientific research.

2.2 Research Methods

The article uses method of quantitative research. This method collects and analyzes information on the basis of the data obtained from the survey. The purpose of quantitative research is to give out survey conclusions, through the use of statistical methods to process data and information (Vu Cao Dam, 2015). In this approach, a one-group posttest-only design model is used. According to this model, individuals in the research will participate in a post-test (output check) after a process of receiving a certain impact. The steps of the method, include:

- Location: Survey at 4 universities of technology and Education in Vietnam (Hung Yen University of Technology and Education, Nam Dinh University of Technology and Education, Ho Chi Minh City University of Technology and Education Minh, Vinh Long University of Technology and Education).
- Survey subjects: 650 students studying technology and engineering majors, 50 educational managers, lecturers of universities of technology and education.
- Survey method: Survey by questionnaire, observation, interview, statistics, summarizing experience.
- Rating scale (divided by level and score).

Table 1. Rating Scale

Levels	Poor	Average	Good	Very Good
Score	1	2	3	4

Evaluation of the level, scoring: Applying the formula (Max - Min)/n (Table 2) to calculate the discriminant interval between the levels, the discriminant interval between the levels of performing management and teaching in technical drawing subject is 0.75. So we have:

Table 2: Level of Assessment and Standards

Level	Level of standard for assessment
Level 1 – Not good (Poor)	$\overline{X} < 1.75$
Level 2 – Average	$\overline{X} = 1.75 \div 2.49$
Level 3 – Good	$\overline{X} = 2.50 \div 3.24$
Level 4 – Very good	$\overline{X} = 3.25 \div 4.00$

3. Results

Based on the learning characteristics of Technical Drawing subject at Universities of Technology and Education, the characteristics of self-directed learning, the content of the current survey includes:

• Students define learning goals;

• Students choose learning content;

• Students choose the form of study;

• Students choose learning methods and forms;

From the results of the analysis and evaluation of the survey contents, the article analyzes the advantages and disadvantages of applying Self-Directed Learning in teaching Mechanical Engineering Drawing subject for students of technology and engineering major of current Universities of Techology and Education.

3.1 Students Define Learning Goals

Performing an assessment of students' views on determining learning goals in Technical Drawing subject at Universities of Technology and Education, the results of the survey on the current situation of students and determining learning goals are described in Table 3.

Table 3. Levels of Self-Determined Students' Learning Goals

Level	Poor		Average		Good		Very good		$\overline{X}$	Rank
	Q.ty	%	Q.ty	%	Q.ty	%	Q.ty	%		
1	026	04.0	190	29.2	122	18.8	312	48.0	3.10	1
2	256	39.3	237	36.5	121	18.7	036	05.5	1.90	5
3	150	23.0	198	30.2	192	29.9	110	16.9	2.40	2
4	253	38.9	223	34.3	038	05.8	136	21.0	2.08	4
5	246	37.7	220	34.8	010	01.5	168	26.0	2.15	3

Level 1: Achieve high results in exams

Level 2: Fill gaps in knowledge to adapt to training requirements

Level 3: Practise the habit of self-discipline, work with a plan

Level 4: Foster learning methods and skills to apply knowledge to life

Level 5: Train will, capacity for creative activities and lifelong learning in the context of industrial revolution 4.0.

The results of survey show that the current status of students' views on determining learning goals for the Technical Drawing subject in the direction of self-directed learning at 5 different levels, of which at Level 1: Achieve results with high rank in the exams with the most students selected and ranked at 1 level, with an average score of X= 3.10. As a result, we find that students learn for the score, not for for building a long-term knowledge base. Meanwhile, the goal at level 2: Covering gaps in knowledge to adapt to training requirements is ranked last (with an average score of X=1.9). Students need to have a good grasp of the knowledge, to ensure the output standards of the subject and this also shows that the students are interested in the requirements of the training major. Objectives at level 3: Practising self-discipline in studying and level 4: Fostering learning methods and skills to apply knowledge in life, ranked at 2nd and 4th, proving that students are focusing highly on learning goals. However, students also need to have a learning orientation to achieve the goal at level 5: Training the will and ability to learn for the whole life in the context of the Industrial Revolution 4.0 instead of studying to just "Achieving the best results in exams". That is, students pay less attention to learning to gain new knowledge than focusing on studying for the end of the subject.

Through exchanges and interviews with managers and lecturers, it is said that students should now set goals for developing skills, methods and attitudes through studying Technical Drawing subject at University of Technical Pedagogy by following self-directed learning.

3.2 Students Choose Learning Content

The content of learning technical drawing subject at the Universities of Technology and Education includes: Compulsory content for students majoring in engineering technology (basic content); Topics, including required and optional topics (Advanced content and Deep content). The results of surveying the level of learning content selected by the students are as described in Table 4.

Table 4. Level of Learning Content in Technical Drawing Subject Chosen by Students

Level	Poor		Average		Good		Very good		$\overline{X}$	Rank
	Q.ty	%	Q.ty	%	Q.ty	%	Q.ty	%		
1	21	03.3	155	23.7	261	40.1	213	32.9	3.02	1
2	75	11.6	132	20.3	294	45.2	149	22.9	2.79	6
3	40	06.2	147	22.5	280	43.1	183	28.2	2.93	3
4	38	05.8	121	18.6	319	49.1	172	26.5	2.96	2
5	36	05.6	192	29.4	285	43.9	137	21.1	2.80	5
6	30	04.6	170	26,1	292	44.9	158	24.4	2.89	4

Level 1: The level of implementation of the learning content of Technical Drawing subject according to the subject program

Level 2: To what extent does the knowledge being studied meet the requirements of technical and engineering training?

Level 3: Learning content of technical drawing subject is based on "Combining both basic and advanced programs; specialized topics are compiled by teachers themselves"

Level 4: The knowledge being taught is based on "Combining both basic and advanced programs; in-depth topics compiled by teachers themselves"

Level 5: To what extent does the content of knowledge being taught have a reasonable ratio between theory and practice?

Level 6: To what extent has the subject content promoted self-study, self-research, and enhanced students' proactive study and creativity?

In general, the survey questionnaires all gave Good results with the content of teaching technical drawing subject. In which, at level 1: The level of implementation of the learning content of Technical Drawing subject according to the subject program is the most chosen by students and ranked at 1 level, with an average score of X= 3.02. In which, the number of votes selected at Very Good level was 213 votes (32.9%); Good level was 261 votes, 40.1%) Average was 155 votes (23.7%) and Poor was 21 votes (3.3%).

The remaining levels of learning content are assessed in different levels. Particularly at Level 3: The learning content of technical drawing subject is based on "Combining both basic and advanced programs; specialized topics compiled by lecturers" which are selected and performed by students quite well, ranked at level 3, with an average score of X= 2.93. In which, the evaluation votes have similar rates at all levels, with 183 votes Very Good (28.2%); 280 votes Good (43.1%); 147 votes (22.5%) Average and 40 votes (6.2%) Poor. The above results show that, despite the combination of basic, advanced to deep programs, the teaching content is at a good level compared to the requirements of the subject's learning objectives.

Regarding the knowledge being studied to meet the training level of the technology and engineering industry, the majority of the survey votes rated Good with 319 votes (49.1%). Especially, the level of content of subject has promoted self-study, self-study at level 6 is done quite well, ranked 4th, with an average score of X= 2.89. In which, the Good level has 292 votes (44.9%); Very Good has 158 votes (24.4%) and Average and Poor has 200 votes (30.7%). Only at level 2: Learning knowledge that has met the training requirements of engineering technology is selected at level 6, with the lowest average score, with X= 2.79. In which, there was 132 votes (20.3%) at the average level and 75 votes at the poor level (11.6%).

From the above survey results, it is shown that, regarding the content of teaching technical drawing subject in universities of Technology and Education in the direction of self-directed learning, it is

necessary to further strengthen the implementation of criteria 3, 4, 6 to achieve high efficiency in learning. That is, students should harmoniously combine basic content, advanced content and in-depth; reasonable combination of theory and practice to achieve learning goals.

Through interviews with managers and lecturers teaching technical drawing subject and from the practice of Universities of Technology and Education, it was found that the actual teaching knowledge is not enough to meet the training requirements of the major and international accreditation of training programs. Therefore, learning content is always updated, students should be active in learning, self-study, self-study to develop new knowledge.

3.3 Students Choose the Form of Learning

In the teaching process, it is necessary to have flexible and creative teaching forms, apply different teaching methods, apply information technology in teaching, help students be flexible in learning and achieve good results, guiding students to self-learning and self-research (Le Vinh Quoc, 2011). In order to have a rich and diverse teaching form, skillfully combining forms, lecturers organize learning activities with different forms, helping students to actively choose appropriate learning forms. The results of the survey on learning forms of technical drawing subject in the direction of self-directed learning are as described in Table 5.

Table 5. Degree of Students' Choice Form of Learning

Form of learning	**Poor**		**Average**		**Good**		**Very good**		$\overline{X}$	**Rank**
	Q.ty	%	Q.ty	%	Q.ty	%	Q.ty	%		
1	06	00.9	185	28.5	371	57.1	088	13.5	2.81	2
2	21	03.3	117	18.0	411	63.1	101	15.6	2.91	1
3	73	11.2	273	42.1	233	35.9	071	10.8	2.46	4
4	78	12.0	161	24.8	330	50.7	081	12.5	2.63	3

Form 1: Learning by class

Form 2: Studying in groups

Form 3: Personal study

Form 4: Online learning

About the form of learning Technical Drawing subject at the Universities of Technology and Education is done by class unit, the lecturers uses a combination of different learning methods for students to actively identify and choose. However, according to the survey results, in Form 4: Online learning, the interaction between lecturers and students on subject content through the internet environment received low results of assessment, in 3rd rank with an average score of X= 2.63. In which, the average number of votes was 161 votes (24.8%), the poor level is 78 votes (12.0%). This result shows that the form of learning technical drawing through the application of assistive technology applications is not high. This is a form

of teaching organization that is currently very interested by the educational community and is also a form of implementation that is quite effective, especially when the Covid-19 epidemic takes place around the world. This shows the fact that learning technical drawing subject is mainly just learning in class.

Implementation of the curriculum content in the university is a necessary issue in the task of lecturerss. Training by credit method in universities has changed much compared to training in the form of annual system. Therefore, the role and position of the lecturerss also change. For the self-directed learning method, the role of the lecturers has shifted from imparting, to guiding, encouraging and supporting students in the teaching method of technical drawing subject.

3.4 Students Choose Learning Methods

Evaluation of the current status of learning methods of technical drawing subject of engineering technology students by self-directed learning. The results of the survey are described in Table 6.

Table 6. Degree of Students' Choice of Learning Methods

Learning method	**Poor**		**Average**		**Good**		**Very good**		$\overline{\mathbf{X}}$	**Rank**
	Q.ty	%	Q.ty	%	Q.ty	%	Q.ty	%		
1	06	0.9	191	29.5	372	57.1	081	12.5	2.80	3
2	05	0.8	214	32.8	319	49.2	112	17.2	2.82	2
3	00	0.0	034	5.2	369	56.7	247	38.1	3.33	1
4	40	6.2	198	30.5	300	46.1	112	17.2	2.74	4

Method 1: Learn from the teacher in class

Method 2: Learning by visual observation

Method 3: Learning from experiential activities

Method 4: Self-study in groups and do learning projects

The survey results show that the majority of students choose the experiential learning method, with an average score of 2.91, ranked 1st. Thereby, this method of learning is implemented by students very often and often when studying Technical Drawing subject. In addition, the learning method through visual observation was chosen by the students with an average score of 2.82, ranked 2nd and the learning method according to the teacher teaching in the class was ranked 3rd and students rated good and very good in teaching technical drawing subject (Thai Duy Tuyen, 2008).

3.5 Self-Directed Learning Capacity of Students

Summary of survey results, capacity of assessment of self-directed learning of students when studying Technical Drawing subject is described in Table 7.

Table 7. Summary of Learning Situation in Technical Drawing Subject to Self-Directed Learning

Content of the survey	Poor		Average		Good		Very good		$\overline{X}$	Rank
	Q.ty	%	Q.ty	%	Q.ty	%	Q.ty	%		
1	186	28.6	215	28.0	97	19.9	152	23.5	2.32	4
2	040	06.2	153	23.5	288	44.4	169	25.9	2.90	2
3	045	06.9	184	28.3	336	51.7	085	13.1	2.70	3
4	018	02.8	178	27.7	352	53.9	102	15.6	2.92	1

Content 1: Students determine learning goals

Content 2: Students choose learning content

Content 3: Students choose the form of study

Content 4: Students choose learning methods

Content 1: Students determine their learning goals, based on the combined results in Table 7 shows that most of the surveyed students have not identified and implemented their learning goals well, with an average score of X = 2.32, ranked 4th. In which, Good had 97 votes (19.9%), Very Good had 152 votes (23.5%), Average had 215 votes (28.0%) and Poor level had 186 votes (28.6%). The results show that students still have many difficulties in self-determining their learning goals in order to self-direct the learning process for themselves.

Content 2: Students choose learning content, according to the survey results described in Table 7, students perform well in choosing learning content by themselves, ranked 2nd, with an average score of X = 2.90. In which, the number of votes for the very good level was 169 (25.5%) and the number of votes for Good level was 288 (44.4%). This result shows that students actively choose learning content according to their abilities, needs and identified learning goals.

Content 3: Students choose the form of learning, the majority of students choose the form of learning in the whole class and in groups. The survey results show that students are very active in choosing a form of learning that suits their needs and learning conditions, with an average score of X=2.70, ranked 3rd, in which 336 votes (51.7%) Good. This result also shows that students are interested in the form of learning in accordance with the selected content and learning objectives.

Content 4: Students choose learning methods, according to the survey results described in Table 7, most students actively choose learning methods that are suitable to the content and learning objectives, ranked first, with an average score of X=2.92. This result also shows that students are very active in choosing learning methods and processes that are suitable for their individual learning conditions, once they have identified their learning goals, content and form practice.

4. Discussion

Currently, the majority of students still carry the “exam” factor in determining their learning goals, not

paying attention to the goal of developing the necessary competencies to meet social requirements. Therefore, in teaching, teachers need to guide students to develop social competencies in addition to professional competencies through each subject in the training program. Meanwhile, students actively choose learning content according to their ability and learning goals. However, the learning content is mainly exploited from the textbook, not actively researching from many different sources to improve professional knowledge for the subject. Most students actively choose the form, process and learning method that are suitable for their individual learning conditions, when the learning objectives and content have been determined. This shows that students are capable of Self-Directed Learning and can fully apply Self-Directed Learning in today's learning.

5. Conclusion

In the context of increasing knowledge, the needs of learners are increasingly diverse and trends in lifelong learning that is interested in, students' ability to self-study and self-direct their learning activities is very important. The article presented the results of survey, analysis and assessment of the current situation of teaching Technical Drawing subject at Universities of Technology and Education in Vietnam according to self-directed learning. The content of the survey and assessment of the current situation includes: identifying goals, selecting content, methods and forms in learning of students.

Through the survey results about students' ability to identify goals, choose learning content, forms and learning methods when studying Technical Drawing subject at Universities of Technology and Eucation, it can be seen that students are still heavily focused on exam goals in learning, and have not actively expanded learning content outside the universities 's curriculum and textbook. However, the ability of students to self-select forms, processes and learning methods is good, meeting the requirements of self-directed learning and lifelong learning for students. With the survey results, analysis and assessment of the above situation, it showed that, in the current context and students' self-directed learning capacity, lecturers can completely apply self-directed learning in teaching.

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