

The Assessment of Hidden Curriculum on Technological Creativity in Technological University

Jeh-Lou MENG

National Taipei University of Technology, Taiwan

Chi-Cheng CHANG

R.O.C. Chapter, International Association of Personnel in Employment Security, Deputy
Secretary-general & Research Fellow. chi.ch@msa.hinet.net

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ABSTRACT: *The purpose of this study is to explore the hidden impact of culture on developing student's technological creativity and to generate an assessment tool for evaluating the hidden curriculum in Technological Universities. The first approach is to define terms as hidden curriculum, cultural environment, and technological creativity through literature review and analysis. Secondly, to form an effective assessment tool that constructed on a reliable structure, a deductive approach is adopted. According to the various factors of the main items and contents, the impact proportion of the culture environment are established and followed with expert consultation to construct the assessment tool.*

The conclusion from this study comprises 13 issues in hidden curriculum on culture environment and 8 items of technological creativity. It is proved that the culture environment has a positive influence on hidden curriculum to foster student's technological creativity. The assessment tool can be applied in technological university to map out strategies to enhance and practice the effect of hidden curriculums.

The result of this research provides some suggestions, related to circumstantial arrangement and some strategies on implementation as the guidelines for enhancing student's creativity and improving school's culture environment in technological university.

1 INTRODUCTION

The culture environment of a campus is an important factor that influents a technical university student. However, owing to the increasing number of technological university in recent years, the educators usually put less emphasis on the importance of hidden curriculum. In 2003, the number of university for the graduates from the secondary education has risen to 168; nevertheless, the concern is rather on the "quality" than on the "quantity". Further, students who receive higher education are expected to bear professional knowledge that gains social esteem. These 'educating', 'learning', and 'practicing' are interacted and fused with many issues involved and refers to the importance of the hidden curriculum in technological universities.

The concept of hidden curriculum is raised in the early 20th century by Dewey and Kilpatrick, but not until 1968 that the official term is proposed by an American scholar Jackson in "the classroom life" (Snyder, 1971) Even in the knowledge-based economy nowadays, the hidden curriculum remains many arguments.

- The hidden curriculum guarantees the success of technological education
- Culture environment arrangement is the core of hidden curriculum
- The hidden curriculum is the root of creativity.
- The hidden curriculum affects student's technical creativity.
- Designing the appraised tools to establish the target for hidden curriculum.

To establish influential appraisal tools is necessary. The technical institute develops and conceals worries, appeared in the technique school management ideas, and gradually transformed for the competitive guidance. In order to guarantee students' "learn" and the educators' "teach" as well as evaluating academic productivity, it is important to assess the campus culture environment to the student technology creativity hidden influence target establishment, has high demand, it can promote technology by teaching "teach", and "study" quality.

2 PURPOSE AND METHODOLOGY

The purpose of this study is to explore the hidden impact of culture on developing student's technological creativity and to generate an assessment tool for evaluating the hidden curriculum in Technological Universities.

This research is based on literature analytic method, deductive method, and expert discussion. First, the affiliation is carrying on to the hidden curriculum and the technical creativity connotation and the definition inquired into, the reorganization and the analysis. Next, the deductive method, the basic logic method, develops the appraisal tool draft are implemented. Then, carries on the face-to-face interviews and the in-depth discussions with ten experts. Besides forming the appraisal tool, the experts and its specialize domain observation, proposes the hidden curriculum culture environment plan and the practice strategy. The research conclusion is obtained after the final analyze, and discussion with the experts.

3 HIDDEN CURRICULUM APPROACH

A. Definitions and functions of hidden curriculum.

The definition of hidden curriculum is varied from different points of view, such as curriculum, knowledge, education, social, philosophy, or economical. This phenomenon also reflects different understandings to the hidden curriculum. For example, from economical viewpoint, the design of the technical institute's hidden curriculum should support the official curriculum, innovated by the initiative students with the task undertaking spirit. It promotes the students to self-development in the future economic activities or has higher competitive abilities for the workforce. The concept of hidden curriculum has come to refer to the elements of socialization that take place in school but are not part of the formal curricular content. Therefore, the hidden curriculum is often described as shadowy, ill-defined and amorphous nature of that which is implicit and embedded in contrast with the formal statements about curricula and the surface features of educational interaction (Snyder, 1971). The implication includes (Vallance, 1983):

1. Comprising any activity occurred in the curricular activities. Interacts in the official curriculum structure including the teachers and students, the campus social value system, the education system organization.
 2. To a great degree is the way in which the various participants played the game, read the cues, adapted to their immediate educational circumstances. Including value and social class view obtaining, as well as socialized activity.
 3. Contains a depth none intention and latency. Such as accidental has no intention to the curriculum grows to the wastage. Therefore this research of hidden curriculum significance, is "refer to the student in the technical institute lever, unconsciousness studies the non-anticipated, non-plan, or non-anticipated has the plan to the knowledge, the value idea, and the standard or the manner".
- The hidden curriculum displays in the enormous function in all levels of school. Casey and Tucker (1994) thought the student penetrates through hidden curriculum academic society can obtain the solution skill. Then realizes the technical institute is the education goal with the role which acts in the society, concurrently Snyder (1971), Vallance (1983), Casey and Tucker (1994), and so on expert's viewpoint, this research obtains the hidden curriculum in the technical institute's function as follow:

1. Hidden curriculum has the moral education function. The affiliation by serves with the cognition, moral and cordiality influencing to the study, sufficiently enhances its moral sentiment, the purification mind with forms the behavior custom which education on teaching is hoped for.
2. Hidden curriculum may make up dominant cultural into insufficiency. Has the consummation study cognition structure, stimulates the student to study the motive, and the promotion study enthusiasm, and assists the promotion official curriculum in the study effect.
3. Hidden curriculum advantageous self-control student's aesthetic standard. Molds the beautiful personality, raises the esthetic appeal, and enhances the student to fee good and enjoys beautiful and created the perfect ability
4. Hidden curriculum is helpful to the student's normal physiology development, the promotion psychologically in health. In good cultural environment, natural environment, under social psychology environment, have high benefit to student's body, mind, and balanced development.
5. Hidden curriculum is helpful to the self-control student's correct occupation idea. Promotes the student to deeply love the work, observes the work ethics and occupational ethics.
6. Hidden curriculum runs risks and overcomes difficulties to the spirit, which innovates. Pushes the movable property study in the technical institute, and within the local industry cooperation interaction process, the hidden curriculum affects the custom, which the student positively innovates, as well as the spirit, which takes risks.

B. Technological University's campus culture environment and technical creativity connotation.

The campus culture environment's important item is a focal point that the hidden curriculum takes. Ou (1999) to induce the technical institute campus culture environment project to include: The Traits of campus culture, the campus atmosphere, innovates the atmosphere, between teacher's interaction relations, student's teaching style, of the class and grade special style, teachers' and students' associates, the classroom, the Leadership, the student mass organization activity and other autonomous activity, the class

and grade and the campus association moves comments the quantity way, the occupational ethics influences, teachers' and students' interpersonal relationship, the cordiality teaching and the practice and so on 13 items.

Opposite to the technical creativity subject, the creativity connotations up to now do not have the conclusion. The creativity is a personality's special characteristic, the cognition ability and personally in the social environment, sensation and the response synthesis, take induction as six items has the high stimulation creativity to the situation factor, including: Free, positively challenges the atmosphere, the higher authority encourages the drive and the sufficient resources, the team supports, organizes (Amabile,1997). The creativity survey may act according to the originality, the flexibility, fluency as well as elaboration and so on four major targets or quotas, these creativity may penetrate pursue the critique ponder technology fully to unfold (Riley & Brown, 1998; Snider, 1995).

From creativity composition factor to view it, Guilford (1950) pointed out the creativity of the factor includes: The question sensitivity, organizes the strength, the series to gather the ability, the complexity again, is accommodating the nature, the novelty, smoothness. In 1967 proposed the creativity should include: Smoothness changes the concerted effort, the creative strength, strives the strength, grades five creativity. Synthesizes its view visibly, the technical creativity includes: The question sensitivity, organizes the strength, the series to gather the ability, the complexity, originality again, is accommodating the nature, the novelty, smoothness and so on eight connotations essential factors. The creativity and the science and technology have the inseparable relations (Peterson, 2002), how to stimulate student's creativity reality is one of technical education's important topics. It promotes technical education to be successful in the shortest way.

4 RESULT ANALYSIS AND DISCUSSION

A. Result analysis

After the expert's discussion, we put it in order and analyze the following ideas in order. Including interviewee's objective regional analysis, cultural environment importance opinion analysis, technical creativity connotation analysis, and appraised tool revised analysis, effectively building in campus culture strategy and so on, it carries on the combination to revision of 14cultural environment project, as well as important adjustment on technology creativity time.

1.Cultural environment project makes the partial rebuild

The followings are the result from the whole rebuild.

- ◆ Increases the row like "field of difference".
- ◆ Deletion like "class and grade special style".
- ◆ The adjuster like "teachers' and students' interpersonal relationship" the change is like Interpersonal relationship between students & teachers, the class and grade and the campus association moves frequently which the department and the campus association moves. Revises may promote the technical creativity for the emphasis to produce comments the quantity way, therefore subscribe is the promotion technology creativity.
- ◆ Occupational ethics influencing merges.

2.Makes technical creativity partial adjustments.

The technical creativity project add and delete situation, thought not suitably excessively simplifies to the technical creativity connotation, avoids its content and the extension has tends to be unclear, "The creation desire" and "firm" two was mentioned by the experts, they was thought as the necessity to bring into line with the technical creativity in the project, the research team thought the concept for existence in the nature, and the increase of "the creation desire" for is really reasonable; The technical creativity possible to displays in the occupation class branch in different difference, but is uncertain while produced; reorganize the revision is the organization .

3.Technical creativity connotation rationality and necessary analysis

(1)Excessively simplifies to the technical creativity connotation, comparatively does not conform to the research's need.

In eight technical creativity project, the scholar thought reasonable it's also essential, only partial participants thought the partial project is possibly to duplicate, proposed again will organize the strength, the series to gather the constructive opinion which the ability, the complexity will delete. Only if excessively simplifies to the technical creativity connotation, will not contain to the technical creativity category and the possibility. From logical viewpoint, when to limits the technical creativity it will simplify, and then its content and the extension will therefore again be organize by the strength and will be "the organization ability", but still retained "the complexity" item.

(2)The increase of "creation desire", an item that really reasonable for the technical creativity

connotation.

The participant proposed the suitable increase of "the creation desire" and "steady " two items for the technical creativity connotation, its significance lies in wants to cultivate the student to have the technical creativity, still had to consider whether student itself did have the creative personality, to the technical creativity self-control it may be said was one of essential factors. But the creative personality in the school is unable to affect student's part, the school may stimulate in student's creation motive to begin, to try to enable the student to have wants to create, the invention "the desire", stirs up regarding the creativity. In addition, thought the student only has the creation desire, but also not necessarily can have the concrete achievement to deliver, in the creation process, often encounters the ponder or the creation difficulty, needs to endure does not pull out, persisted the creation spirit, can overcome all difficulties, to create the outstanding concrete achievement. Therefore, considers with this research relevant height, as well as "the creation desire" and "steady" has the concept depends on for existence the nature, then increases "the creation desire" an item, brings into line with the technical creativity the connotation. But this "the creation desire" has included individual disposition, the motive, the wish, is one kind of creation driving force, responds to the student in the technical creativity self- motive enhancement degree.

B. Discussion

1.Appraisal tool application discussion.

From the suitable situation and the scope viewpoint, the key point which this tool pays attention lies in the campus culture environment to the technical creativity hidden influence, how the penetration situation makes the optimization arrangement, can have the frontage to build the effect which the technical creativity delivers. Therefore the situation builds is the key, but the region differences, each takes the technical creative self-control in the technical institute, this appraisal tool is suitable; Thought the influence factor and the interaction is more important.

Discuss the different occupation class branch application, contains from technical embarks; similar branch technical institute is still suitable for this appraisal tool. This research does not deny the different occupation class branch institute to have nature in each different attribute, in identical technical institute in different branch department, also can have the different cultural atmosphere because of the different situation. In the technical institute each kind of branch differences demonstrated various domains and the technology are top in its degree, but not suitably suspected in the existing specialized technology, further will innovate the improvement future science development, also not suitably will deny its specialized technology, further to make the process innovation, the brand-new technical creation possible prospect. This tool take campus culture situation building as the core, emphasized the campus culture environment influences subtly hidden education function in the technical creativity, by no means it achieves the self-control technology creativity and take the apparent curriculum and form as a goal. Because of the similar branch technical institute it still is the suitable appraisal tool, and might refer to the appraisal result, according to the achievement improved in the campus culture environment.

2.Appraisal strategy discussion.

(1) Use logic way to evaluate as tool.

The research process was conducted by Babbie's deductive approach model. The process on developed assessment tool based on foundational theory was constructed by ontology which leading with property research methods.

The process on final stage, sketches assessment tool was formed through abstracting, combine, and accumulates, assembles into an assessment tool. However, some benefits from both independent and dependent variables were showed on assessment tool.

(2) Expert depth discussion has the wisdom to the merit that the wisdom can see through.

Is suitable after expert depth discussion may form the archery target viewpoint, promotes various targets project as well as appraisal tool effect; obtain the research process to the need of experts. In addition, after expert's depth discussion process, observation various experts and on its specialized domain, of proposes plan on the practice strategy of the hidden curriculum culture environment.

(3) Strong and weak of the clear casual relation.

In the cultural environment and under the technical creativity hidden influence corresponding relations, takes the cultural environment from the technical creativity for depends on the strong and the weak appraisal construction graph, like the chart two shows. Its concept value lies in the nature research to be helpful between the clear variables and the causal relation influence is strong or weak.

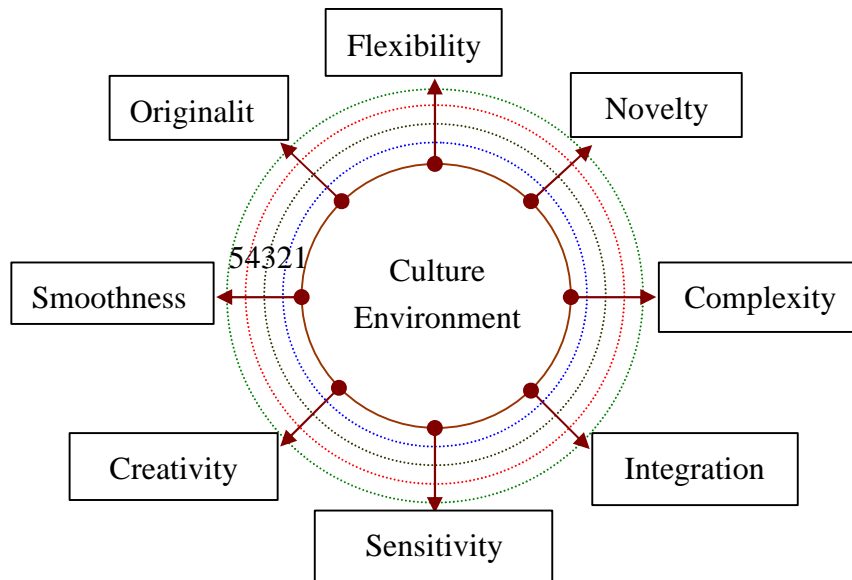


Figure 1. Structure for strong and weak of the clear casual relation

5 CONCLUSION AND SUGGESTION

A. Conclusion

1. Obtaining the cultural environment to the technical creativity influence appraisal tool.

The structure of assessment includes 13 items culture environment and 8 items technical creativity factors. Combining those factor form into X and Y-axis, that both exist dependent relationship, to be an assessment tool. Finally, forming the assessment tool of culture environment on technological creativity was developed in Technological University.

Table 1. The influence of campus culture to student's technology creativity.

		Factors of Technology Campus Culture												
		1	2	3	4	5	6	7	8	9	10	11	12	13
		Traits of campus culture	Campus atmosphere	Practices of novelty & entrepreneurship	Teaching style of teachers	Distinguishes of profession between schools	Interactivities between teachers & students	Peer relationships	Leadership	Student activity & automat city	Frequencies of teamwork activities	Evaluation for developing technique creativity	Interpersonal relationship between students & teachers	Practices of role-play curriculum
Factors of technical creativity	1	Sensitivity												
	2	Integration												
	3	Complexity												
	4	Originality												
	5	Flexibility												
	6	Novelty												
	7	Smoothness												
	8	Intensity create												
		P.S: Please fill in number 1-5. the highest score is 5.												

On the table above works as "Traits of campus culture" as reference target, then may evaluate in the appraisal technology institute hidden curriculum affect student's sensitivity question, the organization series gathers the ability, the complexity, originality, is accommodating the nature, the creativity's strong and the weakness. Infer from this, after completely appraised, not only may embark by the campus culture environment, inspect once again the technical creativity, simultaneously also may embark by the technical creativity; inspect the campus culture environment the interaction situation.

After evaluate, fill in the numeral the maximum total score of 520, takes 104 points as distance, again transforms by the percentage rank concept, then may transform the result to form A (for 520-416 points), the B (415-312 points), the C (311-208 points), D (207-104 points), is poor (for 103-0 points) five ranking skills appraisal result, may facilitate the quantification to make the arrangement and further to explain.

2. Grasps the cultural environment and the hidden curriculum characteristics, is helpful to transforms the concept for the practice of technology innovation strategy

The hidden curriculum culture environment has many characteristics:

- Has the integrity also divides with difficulty for politics, the society, physics, the economy, and the culture.
- Places oneself in can feel the hidden curriculum culture environment non- openness.
- Have attaches to the school official curriculum attachment.
- Dives hides in the campus but omnipresent dives excessiveness.
- Does not have school campus culture difference.
- Has effect which influences subtly; also has the development towards it.
- Has imperceptibly the infectivity that is accepted by the student.
- Has affects the student values for a long time and the manner durability.
- The hidden influence culture environment influence result, with difficulty to the quantification characteristics.

Has grasped the technical institute student's technical creativity essence, and strengthens the hidden curriculum culture environment, then picks the line of essential promotion strategy, can penetrate the hidden curriculum to achieve the self-control student's innovation to start an undertaking spirit, and promotes its technical creativity.

B. SUGGESTION

Based on the research conclusion, this research proposed may promote the student technology creativity frontage influence plan and the practice strategy as follows:

1. To the educational administration controlling organization.

- Comments in the technical institute center refers to this appraisal table, guides various technical institute to take the latent curriculum campus culture environments' soft or hardware arrangement and implementation.
- Demand of better quality teachers improves student's creativity.

2. To academic institute

- Build an opening to the campus atmosphere promoting science and technology innovation. For example sets up the campus society and the technical forum, enables the student to be allowed to discuss the social event or the technical new knowledge, proposes the argument expression view; enables student's new creativity by ways of the industrial field assistance by the market, relative also enables the student to produce approaches to the economical market is need of technical innovation.
- Encouraging teachers and students to interact to raise the technical creativity. Penetrates the school teachers and students and promotes the sensitivity for the student sensation environment to change to its needs, to organize the ability, as well as can fasten the respond to the social demand and the resourceful reversal of stress.
- Strengthening industry-academy cooperation. Through the industrial field exchanges, penetrates each kind of exchange opportunity, strengthens the student technology creation.
- Encouraging creativity of mass organization's development provides the essential assistance. For example, designing and manufacturing solar energy vehicles helps building knowledge and the technical creation as the campus culture which is converted to in order to obtain the effect which displays knowledge and the technical teaching complements.

3. To teacher's teaching methods

- Increasing students' opportunity to display their creativity. It will also stimulate many creativity and innovation.
- Encouraging student to observe and emulate with originality. Expanding student's vision of technology innovation.

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