THE MAPPING OF INFORMATION TECHNOLOGY (IT) TECHNOPRENEURSHIPS BASED OF LEARNING STYLES AND MULTIPLE INTELLIGENCES

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Abstract

This paper presents the mapping of technopreneurships in Information Technology (IT) of learning styles and multiple intelligences based. The IT technopreneurship which are mapped in this research are 8 technopreneurships. These are Software Application Developer, Data Base Developer & Data Analyst, System analyst, Software Engineer, Computer Network Engineer, Graphics Designer & Animator, Multimdia System Developer and Embeded & Computer System Engineer. The mapping methods use analytical data from literature study, interview and observation from IT and Management lecturer, IT technopreneurs and Practiciant of Psichology . IT technoprebneurships mapping base to learning styles and multiple intelligences.

Keyword : mapping, technopreneurships, information technology, learning styles, multiple intelligence

1. INTRODUCTION

The emergence of science and technology has opened up to opportunities and challenges to business and technopreneurships. The existence and growing of technopreneurs is indispensable for the economic development of a country (Kamarudin & Sajilan, 2013). The information technology business from year to year is increasing rapidly. The increasing of these technologies also facilitate the work and lifestyle changes. The emergence of information technology also raises new technopreneurss in the field of information technology. Web programming, mobile programming, multimedia, game technology, animation, elearning, ebusiness, information systems, computer networks, and others appear as Technopreneurships field of information technology.

The number of entrepreneurs and technopreneurs in a country affect the economic condition of the state itself. In Indonesia, preference of the most of higer education graduates to be job seekers and very few who become job creators . This

results in lower emerging young entrepreneurs so that needs to be nurtured an interest in becoming entrepreneurs on a student. Student interest in entrepreneurship is influenced by the family, environment and education (Purnomo, 2014).

Two important aspects of business development and Technopreneurships related information technology are infrastructure and the Human Resources (Depositario, et al, 2011). Improving the ability of innovation and creativity of students in building a technopreneurs should be adjusted by the ability and the support of stakeholders. Universities have an obligation indirectly creates a technopreneurs. This is in accordance with the three pillars of higher education, research, and community service (Arrohman, 2013).

Many students and scholars who wish to run a business or becoming technopreneurs. Some of them are for families, motivated for a seminar or a call to a friend, forced by not got a job, and others (Lestari & Purnomo, 2013). There are several critical success factors that must be considered by the business and are interested in becoming techno for success. Most students and prospective business people assume primary capital to start a business is money, and most importantly in entrepreneurship also money. This opinion armpits wrong but there are more important capital yaiti competency for business or becoming techno (Rusli & Abidin, 2011).

2. LITERATURE REVIEW

Business and Technopreneurship

Purnomo (2014) conducted a study entitled Analysis of Effect Factor Family, Educational and Environmental Interests Against Student Entrepreneurship STMIK Duta Bangsa Surakarta. This study shows that environmental and education factors of studenst are influenced in entrepreneurships while no effect family factors. Depositario, et al (2011) conducted a study with the title entrepreneural Developtment Skill Needs of Potential Agri-Based technopreneurs. This study aims to identify the potential of techno in the field of Agro technology. This study uses the Personal entrepreneural Competency (PEC). Kamarudin & sajilan (2013) conducted a study entitled Critical Success Factors of Technopreneurship in Creative Industries: A Study of Animation Ventures. This study examines the fields animation. This study describes how to be successful in the field of animation technopreneur with exploratory study method.

In economics, business is an organization that sells goods or services to consumers or other businesses, for a profit. Historically the business word of English business, from basic word busy, which means "busy" in the context of individual, community, or masyarakat. In the meaning, busy is doing some activity and jobs that bring profit (Purnomo, 2014).

Technoprenurship is formed from two words, namely 'technology' and 'entrepreneurship'. In general, said the technology is used to refer to the practical application of science to industry or as a

framework of knowledge that is used to create tools, to develop expertise and extracting the material in order to solve existing problems (Depdiknas, 2008).

Technopreneurs spirit and character are formed by three (3) the main component, namely intrapersonal, interpersonal, and Extrapersonal. Interpersonal and Interpersonal is a component of Soft Skill factor, while Extrapersonal is related to the ability to be able to empower both components of the soft skills to be able to be implemented in more widespread impact (Depdiknas, 2008).

Purnomo (2014) has conducted research on the analysis of the influence of family, education and the environment against the student interest in entrepreneurship. The results showed that the affected student interest in entrepreneurship education and environmental factors, while the family is not the dominant factor.

Learning Styles

Learning style refers to the psychological state that determines bagaimanaseseorang receive information, interact and respond to the environment belajarnya.Gaya study has several variable factors include the perception and processing of information, motivation, and psychological factors (Lester, 2015)). Every individual has the characteristics unique in belajar. Learning style describes the uniqueness of human like signature of each person. Based Learning Styles Inventory Memeletics there are seven styles of learning, namely (Lester, 2015):

a. ***Visual***
   This learning style that is associated with the use and utilization of pictures, images and spatial learning.
b. ***Aural***
   The learning style that associated with the use of sound and music
c. ***Verbal***
   The learning style that is associated with the use of writing, and speaking words in learning.
d. ***Physical***
   The learning style that is associated with the movement of the body, hands and other senses.
e. ***Logical***
   The learning style that is associated with the use of logic, reasoning and systems.
f. ***Social***
   The learning style that is associated with the use of logic, reasoning and systems.
g. ***Solitary***
   The learning styles associated with self-learning or self-employed.

In fact not as easy as grouping at the top, and there really is not a 100% pure children have specific learning styles. Each child would have a combination of multiple learning styles. However, usually a child has a tendency to be more dominant in one particular group learning style.

Multiple Intelligence

Theory of multiple intelligences was introduced in 1983 by Dr. Howard Gardner. Howard Gardner promoted that intelligence or intelligence is not a single entity that can be measured in a simple can be measured by IQ tests. Intelligence can be improved and developed throughout the history of human life. Gardner defines intelligence as the

capacity to solve permasalahanm or formed products are valued in one or more cultural backgrounds (Prasetyo & Andriani, 2009).

Multiple intelligences is a descriptive assessment that see how people use their intelligence to solve problems and produce something. This approach is a tool to see how the human brain operate in the world, be it concrete objects and abstract. Gardner initially formulated seven multiple intelligences. In the development of his research, he added one more intelligence. Multiple intelligences by Gardner are (Prasetyo & Andriani, 2009):

- ***Liguistic Intelligence***
  Intelligence related to the capacity to use language to express thoughts and understand the words of others, either verbally or in writing. This intelligence has four skills, namely listening, reading, writing and speaking.
- ***Logical – Mathematical Intelligence***
  Intelligence related to the capacity to use numbers, think logically, to analyze cases or problems, and perform mathematical calculations. This intelligence is linked to the intelligence of the scientists, accountants, computer programmers and so on. Skills related to this intelligence is to solve puzzles, recognize geometric shapes, explore ideas, pengenalkan patterns, enriching the experience of interacting with mathematical concepts, games and others.
- ***Visual-Spatial Intelligence***
  Intelligence related to the capacity to recognize and perform the depiction of objects or patterns received by the brain. This intelligence is very important because it gives children the freedom to express themselves. Skills related to this intelligence in drawing and painting, doodling, recognize and visualize a concept, make crafts and others.
- ***Bodily-Kinesthetic Intelligence***
  Intelligence related to the capacity to coordinate the movement of the whole body. Children with this intelligence indicates already ripening of children in taking action. Maturity is dependent on the motor nerve and muscle information owned. Skills associated with this intelligence to dance, role play, drama, physical exercise, various sports and others.
- ***Musical Intelligence***
  Intelligence related to the capacity to recognize the voice and composing rhythm and tone. Children with prominent musical intelligence easily recognize and remember the tones. It also can transform words into songs and create music games. Skills associated with this intelligence singing, whistling, humming, like knock-ngetukan hands and feet, like to listen to music and others
- ***Interpersonal Intelligence***
  Intelligence related to the capacity to understand the intentions, motivations and desires of others.

This intelligence must be developed in children from an early age because it concerns how to deal with the outside world or other people besides his family. It is necessary that children do not be shy or embarrassed and do not want to play with his friends. Skills related to this intelligence is to lead, organize, share, play groups, cooperation and others.

- ***Intrapersonal Intelligence***
  Intelligence related to the capacity to understand and assess the motivation and sense of self. In life must have a lot of issues and problems, then we must understand the concept of self, that is to know the advantages and disadvantages of self, known as self-image. Intelligence skills related to this thinking, designing purposes, thoughtful reflection, journaling, judging ourselves, introspection, and so forth.
- ***Naturalist Intelligence***
  Intelligence related to the capacity to recognize and classify certain features in the surrounding physical environment, such as animals, plants, and weather conditions. Children who stand out with this intelligence has an interest in the natural surroundings. They enjoy objects and stories relating to natural phenomena such as the occurrence of clouds and rain, the origin of the animals, the growth of plants, the solar system and others.

Technopreneurships in Information Technology

Technopreneurships in Information Technology field very much and have a broad reach. The results of the interviews, questionnaires and Forum Group Discussion (FGD) with lecturer of Computer and Management, IT technopreneurs and educational psychologists then obtained various types Teknopreneurships and in Information Technology. In this research, the limitations and the description (field) of technopreneurships in information technology fields, namely:

Software Application Developer is technopreneurships field related application software. This field includes web applications, enterprise systems and mobile applications. Businesses that can be implemented is the development of application systems, consulting, training and application creation software business application software and systems. Derivatives of this field is very wide as academic information systems, management information systems, e-learning, e-business, e-commer, e-culture, buying and selling on line, mobile applications (m-tickets, m-learning, m -health, etc.) and other forms of software applications.

Database System Developer & Data Analyst

Data Base System Developer and Data Analyst is a field that related with technopreneurships of data base management system (DBMS) and data analysis. This field includes the data base system developers, data base system problem consultation, planning data base

systems and data analysis

System Analyst

System Analyst is Technopreneurship field related systems analysis, better information systems or other applications. This field includes the analysis and perancanangan system (system analysis and design), consultant and business system development software system analysis and design.

Software Engineer

Software Engineer is Technopreneurship field related with Software Development Cycle (SDLC). This field is related to the development of medium and large scale software accompanied with complete documentation. This field also includes consulting and procurement infrastrukutur engineering development software and application software. Business software fields related to software development methods / systems are also included in this field.

Computer Network Engineer

Computer Network Engineer is Technopreneurship fields related with a computer network consisting of consulting network design, network installation pembangunana, reliability and security systems of computer networks and business software and hardware related to computer networks.

Multimedia System Developer

Multimedia System Developer is a technopreneurships field related the development and provision of infrastructure applications and multimedia systems. These fields include the development of interactive multimedia, multiedia practical, industrial multimedia, gaming technology and business fields of software and hardware multimedia and gaming deveelopment.

Embeded and Computer Sistem Engineer

Embeded System and Computer System Engineer is Technopreneurship fields of embedded systems and computer hardware systems. This field includes the design, architecture and development of embedded systems and computer systems (hardware). This field also includes businesses related to embedded system applications and devices and computer hardware architecture.

3. THE MAPPING OF INFORMATION TECHNOLOGY TECHNOPRENEURSHIPS

The Mapping Technopreneurship field of information technology based Learning Styles and multiple intelligences. The data obtained from interviews, questionnaires with lecturer of Computer and Management, actors technopreneurships IT and practitioners of psychology, literature relating to technopreneurships IT with Learning Styles and Multiple Intelligences and the results of the Forum Group Discussion (FGD) with faculty Computer, professor of Management, IT technopreneurs and students.

Technopreneurships of Information technology will be represented in the model Frame. With slot consists of name, Learning Styles and Multiple Intelligences. 8 types of mapping results Technopreneurship and business area of Information Technology based on someone's personal characteristics are as follows:

Tabel 1 Frame of Software Application Developer

SLOT	FILLERS
Name	Software Application Developer
Learning Styles	• Visual Learning Style medium • Verbal Learning Style medium • Logical Learning Style high • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Logical-Mathematical Intelligence high • Visual-Spatial Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

Tabel 2 Frame of Database System Developer & Analyst

SLOT	FILLERS
Name	Database System Developer & Data Analyst
Learning Styles	• Visual Learning Style medium • Logical Learning Style high • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Logical-Mathematical Intelligence high • Interpersonal Intelligence medium

Tabel 3 Frame of System Analyst

SLOT	FILLERS
Name	System Analist
Learning Styles	• Visual Learning Style medium • Verbal Learning Style high • Logical Learning style high • Aural Learning Style medium • Social learning Style medium

Multiple Intelligences	• Linguistic Intelligence high • Logical-Mathematical Intelligence high • Visual-Spatial Intelligence medium • Musical Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

Tabel 4 Frame of Software Engineer

SLOT	FILLERS
Name	Software Engineer
Learning Styles	• Visual Learning Style medium • Verbal Learning Style high • Logical Learning Style high • Aural Learning Style medium • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence high • Logical-Mathematical Intelligence high • Visual-Spatial Intelligence medium • Musical Intelligence medium • Interpersonal

	Intelligence medium • Naturalist Intelligence medium

Tabel 5 Frame of Computer Network Engineer

SLOT	FILLERS
Name	Computer Network Engineer
Learning Styles	• Visual Learning Style medium • Verbal Learning Style medium • Logical Learning Style high • Physical Learning Style medium • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Logical-Mathematical Intelligence high • Visual-Spatial Intelligence medium • Body-Kinesthetics Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

Tabel 6 Frame of Graphics Designer & Animation

SLOT	FILLERS
Name	Graphics Designer & Animation
Learning Styles	• Visual Learning Style high • VerbalLearning Style medium • Physical Learning Style medium • Aural Learning Style medium • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Visual-Spatial Intelligence tinggi • Bodily-Kenesthetics Intelligence medium • Musical Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

Tabel 7 Frame of Multimedia System Developer

SLOT	FILLERS
Name	Multimedia System Developer
Learning Styles	• Visual Learning Style high • Logical Learning Style medium • Verbal Learning Style medium • Physical Learning Style medium • Aural Learning Style medium • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Visual-Spatial Intelligence tinggi • Logical-Mathematical Intelligence medium • Bodily-Kenesthetics Intelligence medium • Musical Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

Tabel 8 Frame of Embeded & Computer System Engineer

SLOT	FILLERS
Nama	Embeded & Computer System Engineer
Learning Styles	• Visual Learning Style medium • Verbal Learning Style medium • Logical Learning Style tinggi • Physical Learning Style medium • Social Learning Style medium
Multiple Intelligences	• Linguistic Intelligence medium • Logical-Mathematical Intelligence tinggi • Visual-Spatial Intelligence medium • Bodily-Kinesthetics Intelligence medium • Interpersonal Intelligence medium • Naturalist Intelligence medium

4. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

1. The Mapping technopreneurships of Information Technology carried out with reference mapping based Learning Styles and multiple intelligences.
2. The Mapping produces 8 types of Technopreneurships in Information Technology ie Software Application Developer, Data Base Developer & Analyst, System analyst, Software Engineer, Computer Network Engineer, Graphics Designer & Animator, Multimedia System developer and Embeded & Computer System engineer.

Recommendation

1. Their method of mapping algorithm based on soft computing
2. Implementation of the mapping on knowledge representation on domain expertise for computing.

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