

Building a Learning Society in the Design Field for Batik Craftworkers in Indonesia

Luthfi Nurwandi^a, Ishak Abdulhak^b, Endang Sumantri^c, Jajat S Ardiwinata^d, ^aDepartement of Industrial Engineering, University of Widyatama, Bandung, Indonesia, ^{b,c,d}Department of Non Formal Education, University of Indonesia Education, Bandung, Indonesia, Email: ^{a*}luthfi.nurwandi@widyatama.ac.id

Design has become an important issue in the era of competition, especially in Indonesia, which articulated that small and medium enterprises (SMEs) were one of its pillars, in order to build the national economy. Attractive conditions were provided for SMEs in the textile industry, a sub-sector of which is the batik industry, which produces a distinctive cloth that characterises the culture of the nation of Indonesia, and has been recognised by UNESCO by being named one of the Masterpieces of the Oral and Intangible Heritage of Humanity in the nation of Indonesia. With regard to the UNESCO award, it is important to focus on the batik craftsmen to realise that batik design is recognised globally. Thus it is vital to increase awareness of efforts by craftsmen to develop competency standards for batik design in order to compete in the global world. By drawing attention to batik craftworkers, this article proposes a model that leverages batik craftsmen striving to make batik design, with attention to adult learning characteristics, the performance characteristics of batik design in an era of competition and efforts to build a learning society.

Key words: *Learning society, batik craftsmen, adult learning, adult performance, design characteristics.*

Introduction

Lifelong education (LLE) offers a forum for communities to improve the lives of their members (Abdulhak, 2002; Kamil, 2011), by changing lifestyles and behaviours through fostering learning (Sudjana, 2010; Suryadi, 2009; Faure et al., 2013). LLE has become an important means for the community, government and industry to enter the era of globalisation. In particular, it has helped Indonesia to face the Asian Economic Community (AEC), which is its vehicle for generating competition through services as well as products

on the free market. As one of the Member Countries of the Association of Southeast Asian Nation (ASEAN), in 2015 Indonesia entered the global market era of so-called AEC. Indonesia's involvement in the production of market areas and services is extensive, as it has a huge largest consumer base and its total population is expected to reach approximately 295 million, amounting to 41 per cent of the total population of ASEAN, between 2030 and 2035 (UNDP, 2015). Indonesia's population growth rate, based on approximately 23 million people in 2010, was 1.38 per cent between 2010 and 2015, but this is predicted to decline to 0.62 per cent from 2030–35 (BAPPENAS, 2013). Table 1 presents a summary of the growth of the population of Indonesia.

Table 1: Indonesia population growth, 2010–35

Year	Population (Thousand)
2010	238.518,8
2015	255.416,7
2020	271.066,4
2025	284.829,0
2030	296.405,1
2035	305.652,4

Source: BAPPENAS (2013).

The population became the main capital in the face of a free market, as Indonesia needed to be able to produce goods and services that would be ready to compete with those of other countries, to provide for its own population. In a free market society, government and industry are required to produce goods and services that meet production (Juran, 2009) and that are in accordance with the needs of consumers for quality (Manalo & Manalo, 2010; Sharma, n.d.; Kumar, 2014), with suitable price levels for consumers (Manalo & Manalo, 2010; Sharma, n.d.; Kumar, 2014). They also need to be able to fulfil orders on time, which (Manalo & Manalo, 2010; Sharma, n.d.; Kumar, 2014) and be responsive to the changing needs of consumers, as well as changes in the business environment (Juran, 2009). Quality, price, delivery and service are among the keys to competition in the era of the MEA, so people began to change their viewpoints and thinking from a local to a global focus, and realised that new skills were required.

Competition in a free market, strongly influenced by the presence of human resources, requires being able to understand and operate the factors of quality, cost, delivery and service (QCDS) consistently and continuously (Power, 2000). Human resources capable of meeting QCDS requirements will determine the level of economic growth and a country's competitiveness. Economic growth is influenced by the level of education and skills possessed by human resources (ADB, 2015), including research skills and the ability of individuals to perform tasks quickly, accurately and in accordance with the needs of the

consumers, without intensive supervision. Workers need to produce goods or services in accordance with the rules set by the company and the market (ADB, 2015).

With regard to mobilising SMEs to provide balanced capability with large industry, several drawbacks should be noted with respect to the expansion of SMEs in Indonesia (Tambunaan, 2002): a limited level of human resource education, especially formal education, including the ability to see business opportunities; poor productivity; a poor work ethos and ineffective discipline; exploitative use of labour; use of unpaid family members as employees; low added value that can't be measured; and inadequate regulations. At the moment the markets not only expect products and services that are able to meet local and export needs, but these have to increase to enhance quality of people's lives (UNESCO, 2014). Quality is key to defeating the competition.

Value creation cannot be separated from creativity, both individually and collectively as a state (Schwab, 2015). The United Nations Development Programme (UNDP), and the World Economic Forum (WEF) state that creativity is more important to a country than size advantage, particularly in terms of quality of life, as evidenced by the emergence of countries that excel in a globally competitive market. On the Human Development Index (HDI), Indonesia ranks 110 (UNDP, 2015), while the Global Competitiveness Index ranks Indonesia at number 34 (Schwab, 2015).

One of the products of creativity is design, which is the process of developing a plan for a product, service or system component (Florida & Tinagli, 2004). Creativity is essentially an individual's or a group's ability to generate new forms. This process should pay attention to four factors: design, function, material and aesthetic values (USAID, 2008), so that the product is able to compete on the global market (Rodgers, 2005).

Design is one competence of a state (Burns, 2009), which is required for effective competition in the era of AEC (Crawford & Anthony, 2008; Cross, 2000). It is essential to build awareness of the importance of design as a competence in order to improve a state's quality of life (Dealtry, 2009).

In this study, the term 'design' is defined as an activity undertaken by individuals or groups to absorb the needs of consumers, who use specialized skills combined with creativity in professional design activities (Lewis & Bonnollo, 2002; Popovic, 2004). The era of globalization has spawned competition, where products and services that are sold to the market must have a high standard (Thomasen, n.d.). Quality products are generally referred to as those geared to the needs of consumers in a culture (Button, 2000). The era of competition acts to improve quality of life through producing competitive products and services that can be accepted by the market. However, many SMEs have not been able to

answer the challenge of the global market, and thus achieve sufficient quality standards to meet consumer needs.

In order to leverage the capabilities of SMEs in generating competitive products, it is important to build an awareness of design activity as a competency. Awareness of design in SMEs needs to be sustainable, as it relates to the regeneration of human resources. This research examines the small textile industry of batik, where the design as an activity undertaken by making and designing batik patterns. It is work that is done mostly by women aged between 60 to 70 years.

Methodology

The purpose of this study was to produce a model for building a learning society in the field of design, especially for batik craftworker sector, and is expected to improve the lives of craftworkers designing batik cloth.

In order to build a model learning society in the field of design, it is important to leverage the design capabilities of the craftsmen. This can be done by studying the factors that influence people's awareness about needing to learn in the field of design at the industry level, including the concepts underlying the emergence of community builders eager to learn, especially with regard to efforts to raise motivation to compete in the field of design.

Observing the factors affecting the establishment of a learning society became the foundation for building a model learning society in the field of design for batik craftworkers, which should raise awareness about the importance of the learning process among craftworkers, with attention to design components in order to enter era of competition, which will produce craftsmen who display competence independently in the form of a learning community design in the batik sector of an industrial environment. With regard to these objectives, it is important for structured stages of design models, research methods and procedures to be implemented, to produce a model of batik design learning for the craftworkers. The object of this research is small industries in the batik sector in Garut Regency.

This research used quantitative methods to develop a model in order to build a community eager to learn in the field of design for the craftsmen batik sector. Such a model is based on efforts to examine the relationship among the factors that affect the establishment of a public eager to learn in the field of design. Creswell (2014) states that the quantitative method is an approach to testing theory with respect to an object of observation, by assessing the relationship among the variables that influence the object of observation.

The stages of model development are as follows:

- 1 Determine the factors that affect the building of a learning society model in the field of design for batik craftsmen.
- 2 Determine the influence of factors impacting the building of a learning society in the field of design for batik craftsmen.
- 3 Construct a model of a learning society in the field of design for batik craftsmen.

Conceptual Model

This section provides an overview of the relationship between the variables, then presents an overview of the relationship between the variables before developing a conceptual model. The conceptual model is explained by considering factors that affect the effort to build a learning society in the field of design for batik craftsmen, which are characteristic of adult learning: the performance of adults in the era of competition, as well as superior design characteristics.

To create a learning society in a small industry environment, it is especially important to consider the batik learning process in terms of the competitive environment (Chappell et al., 2003; Jarvis, 2006; Tennant, 2006; Knowles et al., 2005). Characteristics of adult learning in the era of competition further characterise efforts to establish expertise or professionalism as a hallmark of excellence. It needs to be recognised that adults tend to minimise the process if structured learning, and also avoid the training (Anonuevo et al., 2001; Eikenberry, n.d.).

The performance of adults in a learning situation is very dependent on their motivation to improve their quality of life, not just increasing economic welfare, but also the presence of a recognised professional community that values integrated knowledge and skills in the form of competence (Aguiar & Ana, 2012; Creswell, 2014; Dealtry, 2009; Hefler & Jorg, 2010; (Lester, 2015; Longenecker & Rob, 2013; UNESCO, 2014. This directly affects performance.

Another aspect required to build a learning society for batik craftsmen in the field of design in an era of competition is performance. According to Grow (1991), Hake (1999), Dunlap and Scott (2003), Brookfield (2013) and Dunlap (2005) the formation of a learning community is strongly influenced by recognition of the work, so it is clear that performance is at the root of any effort to obtain recognition in a society that emphasises learning aspects of expertise and professionalism on the job.

From the perspective of adults in the era of competition, a learning society in the field of design is certainly influenced by the tendency for changes to occur in the environmental needs of users of the design (Lidwell et al., 2003; Whitbread, 2002; Lauer & Stephen, 2012), because the ability to satisfy consumers is a superior characteristic of the designer (Cross, 2000; Null, 2000; Orr, 2002; Ulrich & Steven, 2012; Vink, 2005).

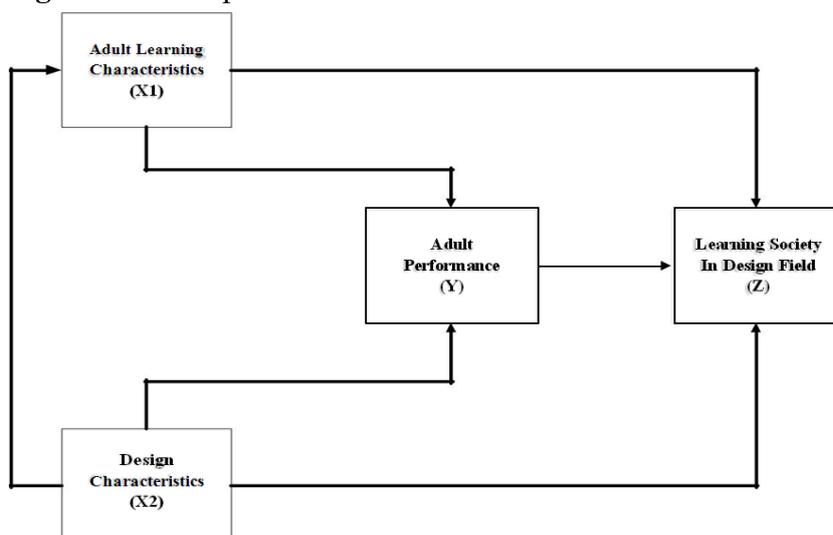
The design is the form that will receive recognition from the community as a demonstration of the professional work of the designer (Issaksson et al., 2015; Rubenson, 2006; World Bank, 2003). The effort to pay attention to the development needs of the community and be transformed into a design (Lidwell et al., 2003) is a form of performance (Ahlgren & Engel, 2011; Hager, 2004; Pate et al., 2000), so it is important to note the tendency of consumer demand for superior design, which directly affects the performance of the designer (Pak & McLaughlin, 2011; Vink, 2005).

In particular, Pak & McLaughlin (2011) and Vink (2005) state that the design has affected the quality of life, in which one aim is to increase a state's knowledge (Aspin & Chapman, 2007; Barros, 2012; Matheson & Matheson, 1996; Rodgers, 2005) and skills (Ahlgren & Engel, 2011; Lorriman, 1995; Marzano et al., 2015; Sung, 2015), which can be obtained through a learning process, so it is understandable if design characteristics are directly influenced the pattern of adults carrying out the learning process in the field of design to establish superior design competence in a state (UNESCO, 2014).

To provide an overall picture of the relationship between the factors required to build a model society eager to learn in the field of design, a conceptual model is presented in Figure 1, with the variable characteristics of adult learning indicated by symbol X1, variable design characteristics by symbol X2, variable performance of adults by symbol Y and variable learning in the community design field by symbol Z.

On the basis of Figure 1, a hypothesis was formed consisting of two groups: a single variable, presented in Tables 2, 3 and 4, and the effect of variable group, presented in Tables 5 and 6.

Figure 1: Conceptual model



A. Single variables impact

Table 2: The impact of adult learning characteristics

Research Questions	Hypothesis	Reference Theory
Are there significant contribution between the characteristics of adult learning to the establishment of learning Society in the field of design?	H ₀ : The variable characteristics of adult learning (X1), does not contribute to significant influence, the establishment of community learning design fields (Z).	[34] & [41]

Research Questions	Hypothesis	Reference Theory
	H ₁ : The variable characteristics of adult learning (X1), contribute to significant influence, the establishment of community teaching design fields (Z).	

Are there significant contribution	H ₀ :	[4], [16], [69], [28], [2], [42], &
------------------------------------	------------------	-------------------------------------

Research Questions	Hypothesis	Reference Theory
Between the characteristics of adult learning to the performance of adults?	H ₀ : The variable characteristics of adult learning (X1), does not contribute to the effect, which is significant to the performance of adults (Y).	[38]
	H ₁ : The variable characteristics of adult learning (X1), contribute to the effect, which is significant to the performance of adults (Y).	

Table 3: The impact of adult performance variable

Research Question	Hypothesis	Reference Theory
Are there significant contribution between the adult performance against Establishment of learning society in the field of design?	<p>H₀: Adult performance variable (Y), does not contribute to significant influence, the establishment of learning society in the field of design (Z).</p> <p>H₁: Adult performance variable (Y), contribute to significant influence, the establishment of learning society in the field of design (Z).</p>	[26], [36]; [28]

Table 4: The impact of design characteristics variable

Research Questions	Hypothesis	Reference Theory
Are there significant contribution between design characters with establishment of learning society, in the field of design?	<p>H₀: Design characteristics variable (X2), does not contribute to significant influence, the establishment of learning society in the field of design (Z).</p> <p>H₁: Design characteristics variable (X2), contribute to significant influence, the establishment of learning society in the field of design (Z).</p>	[3], [21], [12], & [50]
Are there significant contribution between design characters, to performance of	H ₀ : Design characteristics variable(X2), does not contribute significant effect to the effect, to adults performance (Y).	[73], [57], [29], & [23]

Table 4: The impact of design characteristics variable (continued)

Research Questions	Hypothesis	Reference Theory
	H ₁ : Design characteristics variable (X ₂), contribute significant influence, to the performance of adults (Y)	
Are there significant contribution between design characteristics to a adult learning characteristics?	H ₀ : Design characteristics variable (X ₂), does not contribute significant influence, on the characteristics of adult learning (X ₁). H ₁ : Design characteristics variable (X ₂), contribute significant influence, on the characteristics of adult learning (X ₁).	[46], [55], [6], [56], [43], [3], [61], & [45]

B. Group impact variables

Table 5: The Impact of adult learning characteristics and detain characteristics variables

Research Question	Hypothesis	Reference Theory
Are there significant contribution between the characteristics of the design and characteristics of adult learning, jointly to the performance of adults?	H ₀ : Characteristics of a adult learning variable (X ₁), and character designs variable (X ₂) do not contribute a significant influence on the performance of adults (Y). H ₁ : Characteristics of a adult learning variable (X ₁), and character designs variable (X ₂) contribute a significant influence on the performance of adults (Y).	The theory is formed from current research (2016)

Table 6: The impact of adult learning variable, adult performance variable and design characteristics variable

Research Question	Hypothesis	Reference
Are there significant contribution among adult performance, adult learning characteristics, and design characteristics collectively.	H ₀ :	The theory is formed from current research (2016)
Towards the establishment of learning society in the field of design?	H ₁ : Field of design (Z). The variable characteristics of adult learning (X1), character of designs (X2), and adult performance variables (Y) contribute significant influence, to the establishment of a learning society in the field of design (Z).	The theory is formed from current research (2016)

Conclusion

The global economy has created competition for products and goods produced. Design has become a powerful tool to win this competition, so it is important for SMEs, particularly those that already have a distinctive design advantage, to progress their design capabilities in order to explore the wealth of their culture as a means to compete (Jabarullah & Hussain, 2018). In people who do not already have the skills and knowledge required to do this, it is necessary to create a learning society in the field of design in order to improve quality of life, taking into account the characteristics of learning; this is an incentive to explore the needs of consumers, combined with the local culture and the design characteristics to form a recognised standard market design, and high-quality performance in order to gain the recognition of both the producers and the market.



REFERENCES

- Abdulhak, I. (2002). *Adult Learning Methodology*. Bandung: CV. ANDIRA.
- Aguiar, M. & Ana, M.S. (2012). New Skill in Adult Education and Training: The Field of Mediation in Portugal and France. *Procedia Social and Behavioral Sciences*, 69: 890-898.
- Ahlgren, L. & Engel, L.C. (2011). Lifelong Learning Through SMEs: Exploring Workplace Learning in The UK. *Journal of Workplace Learning*, 23(5): 331-348.
- Anonuevo, C.M., Toshio, O. & Werner, M. (2001). *Revisiting Lifelong Learning for 21th Century*. Hamburg: The UNESCO Institute for Education.
- Asian Development Bank (ADB), (2015). *Key Indicator for Asian and the Pacific. Philippines*: ADB.
- Aspin, D. & Chapman, J.D. (2007). *Philosophical Perspectives on Lifelong Learning*. Dordrecht: Springer.
- Badan Perencanaan Pembangunan Nasional (BAPPENAS), (2013). Central Statistics Agency (BPS), & United Nations Fund For Population Activities (UNFPA), "Indonesian Population Projection". Jakarta-Indonesia: BPS.
- Barros, R. (2012). From Lifelong Learning. Discussion of Some effects of Today's Neoliberal Policies. *European Journal for Research on the Education and Learning of Adults*, 3(2): 119-134.
- Brookfield, S.D. (2013). National Development Planning Agency (NDPAENAS), Central Statistics Agency (BPS), & United Nations Fund For Population Activities (UNFPA), "Indonesian Population Projection". Jakarta-Indonesia: BPS.
- Burns, K. (2009). Exploring Design capability in Terms of Absorptive Capacity and Tipping Points. 8th European Academy of Design Conference. Scotland: The Robert Gordon University, Aberdeen, pp. 76-81.
- Button, G. (2000). The Ethnographic Tradition and Design. *Design Studies*, 21(4): 319-322.
- Chappell, C., Carl, R., Nicky, S., Mark, T. & Lyn, Y. (2003). *Reconstructing the Lifelong Learner: Pedagogy and Identity in Individual, Organizational, and Social Change*. London: RoutledgeFalmer.
- Citoni, G., Benoit, M. & Francois, R. (2012). Work Organization, Performance, and health: Introduction. *International Journal of Manpower*, 33(3): 224-232.



- Crawford, M. & Anthony, D. (2008). *New Product Management*. Singapore: McGrawHill.
- Creswell, J.W. (2014). *Research Design: Qualitative, Quantitative, and Mixed Method Approach*. Los Angeles: Sage.
- Cross, N. (2000). *Engineering Design Methods: Strategies for Products Design 3rd Edition*. Chichester: John Wiley & Sons. LTD.
- De Goni, J.I.M.M. (2006). *What is Adult Education? UNESCO ANSWER*. San Sebastian: UNESCO.
- Dealtry, R. (2009). The Design and Management of an Organization's Lifelong Learning Curriculum. *Journal of Workplace Learning*, 21(2): 156-165.
- Dunlap, J.C. & Scott, G. (2003). Preparing Students for Lifelong Learning: A Review of Instructional Features and Teaching Methodologies. *Performance Improvement Quarterly*, 16(2): 6-25.
- Dunlap, J.C. (2005). Changes in Students' Use of Lifelong Learning Skills during a Problem-Based Learning Project. *Performance Improvement Quarterly*, 18(1): 5-33.
- Eikenberry, K. (n.d). *Lifelong Learning: Being a continuous Learner*. Taken From: http://www.Sideroad.com/Setting_and_Achieving_Goals/lifelong-learning.html.
- El-Kafafi, S. (2012). Assessment: The Road to Quality Learning. *World Journal of Science, Technology, and Sustainable Development*, 9(2): 99-107.
- Faure, E., Felipe, H., Abdul-Razak, K., Henri, L., Arthur, V.P., Majid, R. & Frederick, C.W. (2013). *Learning to Be: The World of Education Today and Tomorrow*. Paris: UNESCO.
- Fisk, A.D., Wendy, A.R., Neil, C., Sara, J.C. & Joseph, S. (2005). *Designing for Older Adults*. London: CRC Press.
- Florida, R. & Tinagli, I. (2004). *Europe in the Creative Age*. Europe: DEMOS.
- Grow, G.O. (1991). Teaching Learners to be Self-Directed. *Adult Education Quarterly*, 41(3): 125-149.
- Hager, P. (2004). Lifelong Learning in the Workplace? Challenges and Issues. *Journal of Workplace Learning*, 16(1/2): 22-32.
- Hake, B.J. (1999). Lifelong Learning in Late Modernity: The challenges to Society, Organizations, and Individuals. *Adult Education Quarterly*, 49(2): 79-90.



- Hefler, G. & Jorg, M. (2010). Formal adult Learning and Working in Europe: a New Typology of Participation Patterns. *Journal of Workplace Learning*, 22(1/2): 79-932.
- Issaksson, R., Rickard, G., Mikael, J., Christer, K. & Jorg, P. (2015). Sustaining Sweden's Competitive Position: Lean Lifelong Learning. *Measuring Business Excellence*, 19(1).
- Jabarullah, N.H. and Hussain, H.I. (2018). Comparison of Higher TVET Education and 'Normal' Academic Education: The Determinants of Electrical Engineering Students' Performance, *International Journal of Engineering & Technology*, 7 (4.29): 82-85.
- Jarvis, P. (2006). *Adult Education and Lifelong Learning 3rd Edition*". London: RoutledgeFalmer.
- Juran, J. M. (2009). *Quality Control in Service Industries*. Taken From:http://www.juran.com/elifeline/elifefiles/2009/11/Quality-Control-in-Service-Industries_JMJuran-94.pdf.
- Kamil, M. (2011). *Pendidikan Nonformal: Pengembangan Melalui Pusat Kegiatan Belajar Mengajar (PKBM) di Indonesia (Sebuah pembelajaran dari KOMINKAN Jepang)*. Bandung: AlfaBeta.
- Knowles, M.S., Elwood, F.H III. & Richard, A.S. (2005). *The Adult Learner 6th Edition*. Amsterdam: Elsevier.
- Kommers, P. (2003). Technology for Continuous learning Towards the Knowledge Society. *International Journal Continuing Engineering Education and Lifelong Learning*, 13(5/6): 578-596.
- Kumar, T. V. (2014). Designing a Method for Solving Quality, Cost, & Delivery Problem's in SMEs: To Enable Implementation of Agile/Lean Manufacturing. *International Journal of Innovative Research in Science, Engineering and Technology*, 3(2): 521-528.
- Lantz, A. (2007). Job design for learning in Work Groups. *Journal of Workplace Learning*, 19(5): 269-285.
- Lauer, D.A. & Stephen, P. (2012). *Design Basic*. Australia: Wadsworth Cengage Learning.
- Lester, S. (2015). A Vocational Qualifications System Fit for Adults? Revisiting Some Ideas from the University for Industry. *Higher Education, Skills, and Work-Based Learning*, 5(2): 102-116.
- Lewis, W.P. & Bonollo, E. (2002). An Analysis of Professional Skills in Design: Implications for Education and Research. *Design Studies*, 23(4): 385-406.



Lidwell, W., Kristina, H. & Jill, B. (2003). *Universal Principle of Design: 125 Ways to Enhance Usability, Influence Perception Increase Appeal, Make Better design decisions and Teach Through Design*. Beverly Massachusetts: Rockport Publishers.

Livingstone, D. & Susan, S. (2007). *Work Time and Learning Activities of the Continuously Employed: A Longitudinal Analysis, 1998-1994*. *Journal of Workplace Learning*, 19(1): 17-31.

Longenecker, C. & Rob, A. (2013). *The Eight Imperatives of Effective Adult Learning: designing, Implementing, and Assessing Experiences in the Modern work Place*. *Human resource Management International Digest*, 21(7): 30-33.

Lorriman, J. (1995). *Lifelong Learning in Japan*. *Journal of European Industrial Training*, 19(2): 8-14.

Manalo, R. G. & Manalo, M. V. (2010). *Quality, Cost, Delivery Performance Indicators and Activity- Based Costing*. *Institute of Electrical and Electronics Engineers (IEEE) International Conference on Management of Innovation and Technology (ICMIT)*: 869- 874.

Marzano, G., Velta, L. & Svetana, U. (2015). *Involving Adult Educators in Quality Assessment Process*. 2015. *Procedia-Social ad behavioral Sciences*, 197: 2174-2181.

Matheson, D. & Matheson, C. (1996). *Lifelong Learning and Lifelong Education: a Critique*?. *Research in Post-Compulsory Education*, 1(2): 219-236.

Null, R. (2000). *Universal Design: Principles and Models*. Boca Raton: CRC Press Taylor & Francis Group.

Orr, D.W. (2002). *The Nature of Design: Ecology, Culture, & Human Intention*. Oxford: Oxford University Press.

Pak, R. & McLaughlin, A. (2011). *Designing Display for Older Adults*. London: CRC Press.

Palvalin, M., Maiju, V., Aki, J., Harri, L. & Antti, L. (2015). *Smart-WoW- Constructing a Tool for Knowledge Work performance Analysis*?. *International Journal of Productivity and Performance Management*, 64(4): 479-498.

Pate, J., Graeme, M., Phil, B. & Jim, M. (2000). *Company-based lifelong learning: What's The Pay-off for Employers?*. *Journal of European Industrial Training*, 3(4): 149-157.

Popovic, V. (2004). *Expertise Development in Product Design- Strategic and Domain-Specific Knowledge Connections*. *Design Studies*, 25(5): 527-545.



- Power, C. N. (2000). Global Trends in Education. *International Education Journal*, 1 (3): 152-163.
- Prahalad, C.K. & Venkat, R. (2004). Co- Creation Experiences the Next Practice in Value Creation. *Journal of Interactive Marketing*, 18(3): 5- 14.
- Rodgers, A. (2005). *Non-Formal Education: Flexible Schooling or Participatory Education?*. The University of Hong Kong: Kluwer Academic Publisher.
- Rubenson, K. (2006). The Nordic Model of Lifelong Learning. *Compare*, 36(3): 327-341.
- Schwab, K. (2015). *World Economic Forum (WEF): The Global Competitiveness Report*. Switzerland: WEF.
- Sharma, S. (n.d). Vendor Development Process in Automobile Industry in India: A Comparative Study. *International Journal of Advance Research in Computer Science and Management Studies*, 1(6): 118- 124.
- Sudjana, D. (2010). *Pendidikan Nonformal: Wawasan, Sejarah Perkembangan, Filsafat, Teori Pendukung, Asas*. Bandung: Falah Production.
- Sung, M. (2015). A Study of Adults' Perception and Needs for Smart Learning. *Procedia-Social and Behavioral Sciences*, 191: 115-120.
- Suryadi, A. (2009). *Mewujudkan Masyarakat Pembelajar: Konsep, Kebijakan, dan Implementasi*. Bandung: Widya Aksara Press.
- Tambunaan, T.T.H. (2002). *Usaha Kecil dan Menengah di Indonesia: Beberapa Isu Penting*. Jakarta: Salemba Empat.
- Tennant, M. (2006). *Psychology and Adult Learning*. London: Routledge Taylor & Francis Group.
- The United Nations development Programme (UNDP), (2015). *Human Development Report 2015: Work for Human Development*. Washington D.C.: UNDP.
- The United Nations development Programmed (UNDP, (2015). *Human Development Report 2015: Work for Human Development*. Washington DC: UNDP, (2015).
- Thomasen, A. (n.d). Design of the Netgeneration: Streaming the Flow of Design and Science in the Educational Practice of the Creative Industry. *Kybernetes*. 36(9/10): 1529-1542.



Ulrich, K.T. & Steven, D.E. (2012). Product Design and Development. New York: McGrawHill, Inc.

United Nations Educational, Scientific and Cultural Organization (UNESCO), (2014). Global Citizenship Education: Preparing Learners for challenges of The 21st Centuries. France: UNESCO.

United States Agency for International Development (USAID), (2008). Rencana Bisnis Pusat Desain Internasional Indonesia (Indonesian International Design Center- IIDC). Jakarta: SENADA.

Vink, P. (2005). Comfort and Design: Principles and Good Practice. Boca Raton: CRC Press.

Whitbread, D. (2002). The Design Manual. Sydney: UNSW Press book.

World Bank, (2003). Lifelong Learning in the Global Knowledge Economy: Challenges for Developing Countries. Washington D.C: The international Bank for Reconstruction and Development/ The World Bank.