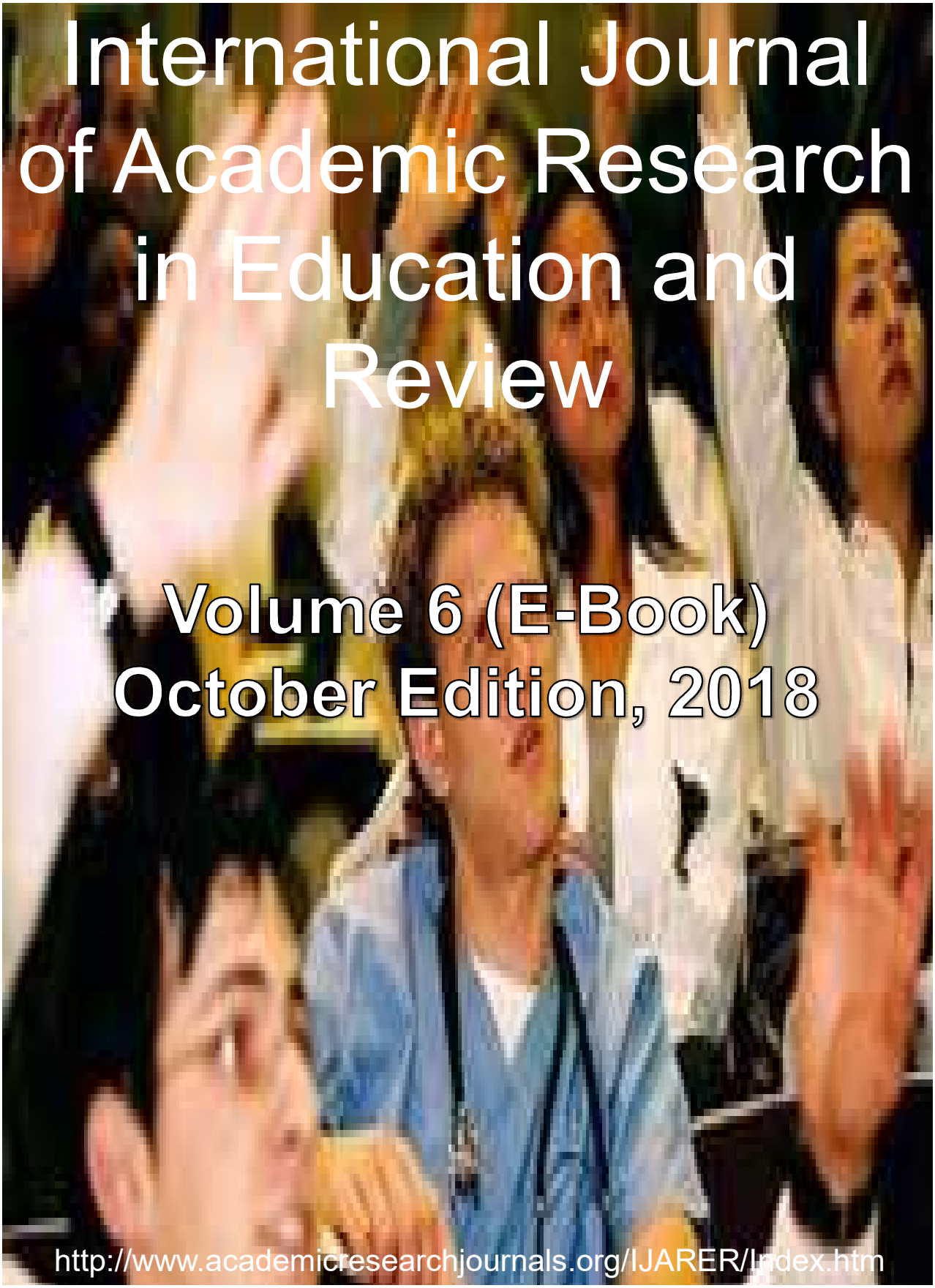

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Full Length Research

Determinants and Acceptance of Open Innovation in Malaysian SMEs

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The paper analysed determinants of open innovation (OI) responses in Small Medium Enterprises (SMEs) and validated the relationship factors that influence open innovation (OI) adoption. Organisation's goal is to meet the needs and requirements of its customers to ensure the survival of the organisation and it is important that OI is adopted for organisational performance. This study looks into the aspect of behavioural and cost factors to determine the adoption level which includes organizational citizenship behaviour, managerial ties, organizational culture, transactional costs and appropriability regime to determine the open innovation adoption among SMEs particularly in manufacturing sector. Actor Network Theory and Social Exchange Theory utilised in this study. Quantitative analysis used to explore the relationships. Validity, reliability and subsequently the data normality were examined by analysing data with the aid of SPSS software. The study reveals that all the factors are positively correlated and there is a strong relationship between factors of the study with the adoption of OI. Developing new tools and technologies that motivate open innovation adoption brings more beneficial to SMEs. From theoretical aspect, this study contributes the dimensions of behaviours and costs in proposing the guidelines for SMEs to adopt OI.

Keyword: Open Innovation, SMEs, manufacturing, behaviour, costs, knowledge and technology

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INTRODUCTION

Open innovation is defined as the flow of technical knowledge to expand productions (Chesbrough et al. 2006). Successful studies on open innovation adoption are largely found in big and high tech organisations (Chesbrough 2003; van de Vrande et al. 2009; Bianchi et al. 2010). SMEs are still lacking in terms of innovation mainly in developing countries and this has caused them to lose their competitive edge (Abdullah & Manan, 2011, Bhuiyan, et al. 2016 and Damanpour & Aravind 2012). Furthermore SMEs in developing countries totally lack innovative initiatives (Bhuiyan, et al. 2016). Malaysian government has been providing financial support for SMES to develop but their development, growth and productivity overall has declined over the years (Malaysia Productivity Corporation, 2016). This is partly due to SMEs inefficiencies in enhancing innovative ideas in productions. This study focussed on SMEs that operates in manufacturing sector as they face low productivity, lack in innovative ideas and innovative products to compete in national and international markets (Bhuiyan, et al. 2016).

Challenges and concerns faced by Malaysians SMEs such as lack of skilled labour forces have affected the productivity and quality. As such, SMEs are unable to compete in term of innovative products with SMEs around the world especially from China and India. SMEs in developed countries are producing products that meet global standards and requirements (Malaysia Productivity Corporation, 2016) and this has resulted in lack of confidence among investors to invest in Malaysia especially foreign direct investment (FDI) which requires SMEs to produce intermediate products. The main issue that SMEs need to tackle is innovative capabilities to ensure superior performances and productivity (Malaysia Productivity Corporation, 2016).

SMEs survival depends on knowledge and technology to produce quality products and that only can be achieved through creativity, technology and innovation in productions (Bhuiyan, et al. 2016). The main reason SMEs unable to meet the requirements and product standard is due to low technology adoption and incompetent towards external technologies adoption. In order to increase technology adoption, it is essential for SMEs to develop its labour force skills and capabilities to adapt changes in adopting innovation in productions. Therefore SMEs must undertake innovation initiatives to improvise production and competencies through engagement with internal and external actors to provide solution for any forms of difficulties in manufacturing Innovation is vital for SMEs to gain opportunities and create new markets and thus achieving competitive advantages (Birkinshaw, 2011; Clawson, 2009; Grant, 2010). SMEs capability to innovate and manage the innovation processes is difficult due to the limited resources and open innovation provides a platform for SMEs to change the productions concept from internal R & D to external R & D (Hamel, 2002 and Kim & Mauborgne, 2005).

Management play an important role in engaging with employees whom provide doorways to adopt new ideas, needs and opportunities (Gassmann, et al. 2010). Behaviour is important in addressing the issue of participating in innovation initiatives by exploring the practices to encourage employees to adopt innovative behaviours and implement open innovation (Amo, 2006). Communication, association and cooperation with external parties are crucial in boosting innovation practices (Vrgovic et al., 2012). Manager's capacity and competencies are important in deciding open innovation practices (Wynarczyk, 2013). Manager's ties in communicating with internal external parties overall benefits the organisation as it will enhance the adoption level (Brunswicker and Ehrenmann, 2013).Organisational culture that promotes incorporation with internal and external setting for effective collaborations and usage of resources need to be in placed to facilitate open innovation adoption (Boschma, 2005 and De Jong et al., 2007). Adverse organisational culture may cause difficulties in creating harmony relationships (Van de Vrande et al., 2009). The type of organisational culture that is needed to support (Murat & Baki, 2011and Naranjo-Valencia et al., 2011) and the type of organisational culture that needs to be avoided Saunila (2014) to adopt open innovation. Open innovation is still at infancy stage and therefore there is avenue to conduct an empirical and theoretical research (Lichtenthaler, 2011).Mechanisms are needed to protect innovation (Hurmelinna-Laukkanen and Puumalainen, 2007) and instrument is needed to safeguard the innovations from various threats especially the imitators. Appropriability regime is one of the strategies to protect their intellectual property rights (Gans and Stern, 2003). However, overcoming imitators is not going to be an easy task and therefore exploring the appropriability regimes helps to determine then rate of open innovation adoption (West, 2006).

Many researchers have given limited attention to SMEs innovation competences particularly in Malaysian context (Brunswicker and Vanhaverbeke, 2014; Hin et al., 2013 and Malaysia Productivity Corporation, 2016). Studies has focussed on external players issues in the adoption of open innovation but internal issues within the organisation such as employees issues rarely has been discussed (Wendelken et al., 2014). Employee participation is important in making a decision to adopt open innovation; however this concern is highly under-researched (Wendelken et al., 2014). The need to focus on employees 'barriers would assist SMEs in adoption as well as the collaborations with external parties to gain technological knowledge (Colombo et al., 2014 and Parida et al., 2012). Many researchers focussed their studies in SMEs (Gassmann et al., 2010; Henkel, 2006; Lee et al., 2010; Parida et al., 2012; Rahman and Ramos, 2013 and 2014), but focussed on specific industries and issues through qualitative and case studies (Chesbrough, 2003; Laursen and Salter, 2006& 2014).Open innovation responses among SMEs are very low and need in depth study even though various theories has been utilised. Factors such behaviour and costs that leads to innovation capabilities need to be taken into consideration before implementing OI (Clausen et al. 2013), Therefore, this study will examine the factors that determines the adoption of open innovation in Malaysian SMEs and able to shed some important insights for SMEs to implement innovation strategies (Kayadibi et al., 2013). Many researchers have focussed open innovation in large and high technology companies with specific industries and specific issues through qualitative and case studies Chesbrough, 2003;Henkel, 2006; Kirschbaum, 2005; Lecocq and Demil, 2006 and Laursen and Salter, 2006). All these issues receive less attention towards SMEs especially in manufacturing sector. Therefore, this empirical study was undertaken torate the adoption responses by SMEs and how it can be improved further.

LITERATURE REVIEW

Open Innovation

Open innovation is a term endorsed by Henry Chesbrough as inflow and outflow of knowledge for organisation to maximise the usage of external innovation (Chesbrough et al., 2006). Most organisations especially SMEs lack strategies in developing technology to produce effectively (Colombo et al., 2014). External technologies are crucial for SMEs to be success in productions whereby innovative ideas and knowledge are absorbed to respond to current demands. Open innovation is valuable for SMEs to respond to current environment (Parida et al., 2012). This study analyses behaviour and costs options in adopting OI and if it is not feasible, SMEs need to switch back to original idea and emphasise on closed innovation (Colombo et al. 2014). In addition to behaviour and costs, selections of external parties are crucial in determining OI success (Theyel, 2013). However, it will not be an easy task to explore external parties for technology as it involves costs (Abouzeedan et al., 2013; Lee et al., 2010 and Spithoven et al., 2013). Associations with external parties are crucial to advance technological knowledge which is not attainable in closed innovation environment (Colombo et al. 2014). Employees 'skill will determine OI adoption and therefore management must value employees' skill in order to be successful in the adoption rate (Comacchio et al. 2012). However, with the absence of such skills, it will decrease the adoption rate (Idrissia et al., 2012).SMEs capacity and competencies is vital in shaping open innovation responses (Wynarczyk, 2013) and therefore open policies need to be formulated and incorporated to support OI (Kim et al., 2014 and McAdam et al., 2014). Open policies is needed during transformation from closed innovation to open innovation by identifying, assimilating and applying the valuable external information in productions (Bocken et al., 2014; Brunswicker and Ehrenmann, 2013; Grimaldi et al., 2013 and Teirlinck & Spithoven 2013).

Organizational Citizenship Behaviour (OCB)

OCB is a voluntarily behaviour based on aspiration and willpower Korkmaz and Arpaci, (2009) that boosts organisation's competences (Bolino and Turnley, 2003). The behaviour study is important to support psychological and social component of organisations (Hoffman et al., 2007; Podsakoff et al., 2009). OCB concept is used to enlighten different forms of behaviour in an organisation that influences the effectiveness of various stages of employees' productivity. Many firms find it difficult to exploit or unsuccessful to adopt technologies due to unwillingness of the workforce to adopt it (Burton-Jones and Hubona, 2006). OCB represents employees' behaviours and attitudes in the workplace Chung et al., (2014) and also an added value to experienced employees (Sabiote et al., 2012) that enable open innovation adoption. Positive behaviours such as teamwork, offering ideas and encouraging a helpful environment which is part of OCB that requires employees support, thorough, communicated and informative employees (Yen et al., 2008). In addition, employees' commitment plays an important role for organisational effectiveness Payne (2013) and that can be considered as most valuable asset in the knowledge-based economy (Jaakkola and Alexander, 2014).OCB is characterized by altruism, conscientiousness, courtesy, harmony and Sportsmanship among the employees. Any innovation initiatives require the changes in behaviour and environment as well as commitment of management by engaging with all the stakeholders (Karkkainen et al. 2013 and Markkula & Kune 2013). Enhancing OCB improves organizational functioning and performances (Omari et al., 2012) and for organisation effectiveness, management should utilise the concept of OCB to empower employees (Mukhtar et al. 2012). The objective of this study is to identify the best working behaviour that suits to the organisational effectiveness and the most important the dimensions of OCB that influences working culture (Ishak, 2005; Naqshbandi and Kaur, 2011 and Naqshbandi, and Kaur, 2013).

Organisational culture

Culture is normally how the way things are expected to be done traditionally in an organisation (Patel and Conklin, 2012). Therefore, the structure and the control system influence employees' behaviours which impacts the performances (Gregory et al., 2009 and Hartnell et al., 2011). Enhancing internal motivation, cooperation, socialization and emphasizing communication among various communities of the organisation will enhance performances Ghosh et al. (2004). This concept will drive employees' to accept different working culture that is suitable for innovation adoption (McKinlay, 2005). It is important for SMEs to implement and apply knowledge successfully to nurture innovation adoption in their organisation and achieve higher performances (Wonglimpiyarat, 2010). Culture is closely related to human factor and that will influence innovation acceptances (Krassnicka et al., 2014 and Prajogo and Ahmed 2006). Therefore understanding the capacity of employees and nurturing and promoting innovative culture is crucial to respond to the external environment

(Akman & Yilmaz, 2008; Laforet and Tann, 2006; Ledwith, 2000; Neely et al., 2001; Pullen et al., 2012). Studies examining the organisational culture influencing open innovation among SMEs and the contributing factor towards innovativeness are lacking (Kraus et al., 2012; Naranjo-Valencia et al., 2011 and Saunila, 2014). The studies that reflects the relationship between organisational culture and open innovation is scarce and further research complements theoretical and empirical research (Lichtenthaler, 2011). Many studies stated that organisational culture is the main concern on open innovation adoption (Boschma, 2005; Carbone et al., 2010; Lichtenthaler, 2011; van de Vrande et al., 2009). The availability of resources, effective collaborations and support facilitates open innovation adoption (Boschma, 2005 and De Jong et al., 2007). However, adverse organisational culture causes collaboration problems van de Vrande et al., (2009) and Saunila (2014) study exposed the negative relationship between culture and innovation performance. On the contrary, many studies support organisational cultures and indicated that it is positively associated with innovation performances (Murat and Baki, 2011 and Naranjo-Valencia et al., 2011). The nature of organisational culture need to be analysed in order to find out which type of culture that supports innovation adoption and the type of culture that needs to be avoided (Lichtenthaler, 2011). Therefore understanding innovative culture is important for organisational functioning, productivity and performances (Pichlak, 2012; Uzkurt et al., 2013) apart from employee motivation (Krasnicka et al., 2014b).

Managerial Ties

Managerial Ties is defined as managers or executives who are well connected with external parties to secure scarce resources needed for productions (Geletkanycz & Hambrick, 1997and Li, et al. 2008); planned to seize opportunities (Peng and Luo, 2000); managing uncertainty environments (Li and Zhou, 2010) and improve firms performance (Adler and Kwon, 2002). Association with external parties enable firms to provide quality and innovative products by having networks with relevant parties but it will not be an easy task (Curley and Salmelin 2013). Searching for the right partner is not going to be an easy task as it involves decision and complex process that impacts the innovation direction of any organisation (Holzmann et al. 2014). Identifying the right partners and building cordial relationship and ensuring good outcomes (Naqshbandi and Kaur, 2011) cultivates open innovation adoption. Externalties with either formally or informally (Padilla-Meléndez et al., 2013) might lead to effectiveness of open innovation responses among SMEs Lee et al., (2010)and benefits through various opportunities (Heger & Boman 2014 and Hemert et al., 2013). Open innovation supports the notion of collaboration among various networks McAdam et al. (2014). Tieswith external parties are effective Torok and Toth (2013) since SMEs able to select which parties to work with (Theyel 2013). Strong networking strategy via managers is important to pursue open innovation and therefore suitable parties are crucial such as firms, universities, research organisations and government officials (Brunswicker and Vanhaverbeke 2014) to increase the response rate of open innovation adoption. As such, ties with external parties enable SMEs to make strategic moves (Colombo et al. 2014) for their productions. However weaker ties with external parties will increase the barriers to accept open innovation notion (Dodourova & Bevis 2014 and Pullen et al. 2012). Funding for technological developments is crucial and therefore ties with government official and financial institutions will help SMEs to gain financial assistance (Wynarczyk, 2013 and Brown and Mason, 2014). Selection of external parties is essential in refining the parties that can be collaborated to gain innovative ideas from the selected parties (Theyel, 2013).

Transactional costs

Transactions costs comprise the ex-ante costs such as searching external parties which also includes negotiations and drafting agreements and safeguarding the agreement such as monitoring and enforcements (Williamson, 1985). In simple term, it involves there stages such contact, contract and control (Coase 1937). Firms need to ensure that transaction partners are reliable and therefore contingencies plan need to be employed in the event if there are any breaches of contractual promises (Rahman and Kumaraswamy 2004). Decisions have to be made by SMEs for effectiveness of innovation in productions either to continuewith closed innovation or adopt open innovation or combinations of both (Bogers2010). Transaction costs generally occur in productions but the potentials will be higher when innovative initiatives undertaken Schwiebacher, (2012) but the ability of firms to manage the innovative activities could reduce the transaction costs. One of the methods that enable SMEs to reduce transaction costs is by responding to open innovation initiatives (Fink et al., 2015).), SMEs that are incapable of adopting open innovation not only increases the transaction costs but also incur adverse effects in their productions and growth (Goedhuys & Srholec, 2015).Many studies conducted also confirmed that lower transaction costs reduce overall production costs (North, 2005; Tebaldi and Elmslie 2013). However poor mechanism placed in organisations will cause hindrance to innovation adoption and increases transactional costs (Chadee and Roxas, 2013). SMEs need to play an important role in managing costs especially by reducing explicit and implicit cost (Zhu et al., 2012). In order to reduce transaction costs, it

is vital for SMEs to expedite innovative activities (Suematsu, 2014). Therefore, SMEs have to evaluate innovation capabilities through determining make or buy decision to reduce their transactional costs (Tidd et al., 2001).This study aims to examine existing internal production capabilities and how it can be enhanced through open innovation with a low degree of transaction costs (Cirera, 2015).

Appropriability Regimes

Appropriability regime is a form of mechanisms to protect innovation (Hurmelinna-Laukkanen and Puumalainen, 2007) by placing various strategies to protect intellectual property rights (Gans and Stern, 2003). Formal appropriability regime such as patent, industrial design, trademark, and copyright and informal such as secrecy, lead time, and complexity of design can be used as substitutes (Kultti et al., 2007; Somaya, 2012) or complements (Levin et al., 1987; Hall et al., 2014) to secure protections. Strong appropriability regimes may encourage open innovation adoption (Chesbrough, 2003; West and Bogers, 2014) but weak appropriability regime discourages open innovation adoption (Laursen and Salter 2006). Open innovation involves external parties and the tendencies of knowledge being exploited by certain parties involved in retrieving the knowledge in illegitimate means are high without proper protections (Milesi et al., 2013). The knowledge can be retrieved by firms' competitors and free riders especially during introduction of new products in the market. The challenges of how best to protect the innovation are enormous in order to achieve maximum returns from the innovation initiatives (Hollanders and Es-Sadki 2013). The forms of protections that exist are copyrights, confidentiality agreements, patents, trademarks; secrecy, specific assets and lead time are some that enables firms to secure financial returns (Boldrin& Levine, 2013; Hagedoorn & Zober 2015 and Moser, 2013). Appropriability regimes provide framework for the exclusiveness of knowledge sharing, (Audretsch et al. 2012 & Hagedoorn and Zober, 2015) particularly for manufacturing industries (Laursen and Salter, 2014). Resilient appropriability mechanism is required to build confidence to investors and gain profit in the long term (Czarnitzki et al., 2014). In addition, appropriability mechanisms need to be implemented in order to avoid any forms of exploitation Milesi et al., (2013) Innovations are considered to be incremental and radical Hurmelinna-Laukkanen, et al. (2008) appropriability mechanism is critical to moderate the relationship between innovation abilities and open innovation adoption (Lawson et al., 2012).Empirical studies are lacking in addressing the relationship between SMEs appropriability regimes and open innovation adoption (Leiponen and Byma 2009; Thomä and Bizer 2013). Exploring the appropriability mechanisms helps to determine the advantages and disadvantage in responding to the open innovation adoption (West, 2006). Determining appropriability mechanisms is not going to be an easy task as it lacks theoretical and empirical approach in determining the returns from innovation adoption (Harabi 1995).

Model Selection

Actor Network Theory (ANT) and Social exchange theory (SET) were deployed to analyse workplace behaviour (Malinowski, 1922 and Mauss, 1925); relationships (Blau, 1964); networks (Brass et al. 2004); psychological contracts (Rousseau, 1995); independence (Westphal and Zajac, 1997) and organisational justice (Konovsky, 2000). In addition, it also offers analytical tools (Czarniawska, 2009) to analyse the effects of devices (Law, 1988); organisations (Law, 1994) and how these relationships can be accomplished. Both theories addresses the complex structure of humans and technology and how both works as networks (Bloomfield & Vurdubakis, 1999 and Spicer et. al., 2009).

RESEARCH METHODOLOGY

Descriptive research has been utilised that includes surveys and fact-finding enquiries to seek to measure independent, moderating and dependent variables. This study uses quantitative model which adopts a reductionist (positivist) approach (Creswell, 2012). Factor analysis emphasizing on Likert 5 point scale were used in constructing questionnaires for survey. Convenience sampling method is best suited to determine and locate the population sample on manufacturing companies. Hypothesized is tested to explain the nature of relationships (Sekaran 2003 and Sekaran & Bougie, 2010).

Analysis

The reliability of a measure indicates the extent to which it is without bias (error free) and ensured consistent measurement across time and various items in the instrument (Field, 2005). The reliability is based on the idea that individual items (variables) should produce results consistent with the overall questionnaire. Cronbach's has indicated 0.799 to be an acceptable reliability coefficient. There are two versions of alpha, the normal and standardized versions. The normal alpha is appropriate when items on a scale are summed to

produce a single score for that scale. The standardized alpha is useful though when items on a scale are standardized before being summed (Field 2005).

Pearson Correlation Analysis

Correlation analysis was performed for all the variables involved to figure out the relationship between the variables which estimates the strength and direction between variables. The Pearson's r value is positive 0.851, significant at 0.01 levels which mean there is positive correlation between OCB and adoption of open innovation (OI). Therefore it can be concluded that all five items in organisational citizenship behaviour is positively correlated with open innovation adoption. The Pearson correlation coefficient for the relationship between OCB and OI adoption is positively correlated. Therefore, the results of the following hypothesis testing are supported:

H1: There is a significant positive relationship between OCB and Open Innovation adoption.

The table 1-3 shows the correlation and the relationship between organizational culture (OC) and open innovation (OI) adoption. The Pearson correlation coefficient for the relationship between organizational culture (OC) and OI is 0.641 at 0.05 significant levels. Therefore Pearson Correlation analysis suggests that there is a positive relationship between organizational culture and open innovation adoption. Therefore, the result of the following hypothesis testing is supported.

Table 1: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.799	.813	65

Table2: Correlations between OCB and OI

		OI
OCB	Pearson Correlation	.851(**)
	Sig. (2-tailed)	.001
	N	40

H2: There is a significant positive relationship between Highly Integrative Organisational Culture and Open Innovation adoption.

The Pearson correlation coefficient for the relationship

Table 3: Correlations between Organisational Culture and OI

		OI
OC	Pearson Correlation	.641(**)
	Sig. (2-tailed)	.013
	N	40

Table 4: Correlations between Managerial Ties and OI

		OI
Matie	Pearson Correlation	.424(**)
	Sig. (2-tailed)	.004
	N	40

* Correlation is significant at the 0.05 level (2-tailed).

between Managerial Ties (MATIE) and OI is 0.424 at 0.05 significant levels. There is a positive relationship between managerial ties and open innovation adoption. Therefore, the results of the following hypothesis testing are supported. (Table 4)

H3: There is a significant positive relationship between Managerial Ties, Universities and/or other Research Centers, customers and adoption of open innovation

The Pearson's r value is significantly positive 0.785, significant at 0.01 levels which mean there is high positive correlation between transactional costs (TC) and adoption of open innovation (OI). Therefore it can be concluded that transactional costs is positively correlated with open innovation adoption. Therefore, the results of the following hypothesis testing are supported:(Table 5)

H4: There is a significant positive relationship between low Transaction Cost and adoption of open innovation.

The Pearson's r value is significantly positive 0.606, significant at 0.01 levels which mean there is high positive correlation between aappropriability regimes (AR) and adoption of open innovation (OI). Therefore it can be concluded that the items in appropriability regimes is positively correlated with open innovation adoption. Therefore, the results of the following hypothesis testing are supported: (Table 6)

H5: Appropriability Regime moderates the relationship between OCB, Organisational Culture, Managerial Ties, Transactional Costs and Open Innovation adoption.

Table 5: Correlations between Transactional Costs and OI

		OI
TC	Pearson Correlation	.785(**)
	Sig. (2-tailed)	.000
	N	40

Table 6: Correlations between Appropriability Regimes and OI

		OI
AR	Pearson Correlation	.606(**)
	Sig. (2-tailed)	.001
	N	40

** Correlation is significant at the 0.01 level (2-tailed).

Model Summary

Table 7-14, exhibits the adjusted R Squares for organisational citizenship behaviour. The R Squares for OCB is recorded as 89.9 %. The result suggests that OCB contributes to 89.9 % impact on adoption of OI among SMEs. Next is organisational culture that contributes to 84.7% impact on adoption of OI among SMEs. This is followed by managerial ties that contributes to 54.6 % impact on on adoption of OI among SMEs which seems to to be the weakest among all items. The next is transactional costs that contributes to 71.5% impact on on on adoption of OI among SMEs. This

indicates that OCB being the most important factor that contributes to adoption of OI among SMEs and followed by organisational cultre and transactional costs but managerial ties seems to be the weakest factor which affects adoption of OI among SMEs.

Anova test

Based on the output in Table 8, 10, 12 &14, all four variables' F statistical significance value is less than 0.05. This explains that all 4 independent variables explaining the variation in the dependent variables quite well. ANOVA result which shows high F value and this suggests that the model selected to test the relationships. The tables exhibit the F test values for organisational citizenship behaviour, organisational culture, managerial ties and transactional costs. The F test value for organisational citizenship behaviour, organisational culture, managerial ties and transactional costs recorded as 62.743; 59.605; 56.089 and 128.87 respectively. The
results suggest that transactional costs contributes to 128.87 impact on adoption of open innovation among SMEs. OCB contributes to 62.743 impact on the adoption of open innovation among SMEs; followed by OC that contributes to 59.605 impact and finally MT contributes to 56.089 impact on adoption of open innovation among SMEs. All the above results for F test value are more than threshold of 4.0 F test value. This indicates that model selected to test the relationship between independent variables and dependent variable is fit and robust.

DISCUSSION OF THE FINDINGS

This study explored the role of OCBs in responses to open innovation adoption. Hypotheses tested and the outcome is that OCBs is significantly related to open innovation adoptions but the impact of the dimensions of OCBs varies. This finding endorses the previous study of Organ (1988) that OCBs has a major favourable impact on organisational processes and efficiencies. This study validates the concept of OCB and management can utilise this concept to promote open innovation in SMEs. As such, OCB help employees to maintain a positive attitude even when things don't go in a right way or when any minor setbacks occur. Employees' willingness to sacrifice their personal interests for organisations benefits through helping behaviours within or outside the organisations (Organ, 2006). Over the years, such helping behaviours will ultimately be valuable for the effectiveness of the organisations. OCB also involves preventing any problems created for co-workers in an organisation (Podsakoff & MacKenzie, 1994); being considerate to other co-workers and regular communication with co-workers to prevent unwanted issues being created in organisations.

The main hypothesis of organizational culture labelled as innovative culture which fosters creativity that will correspond with a greater scope of employee development and higher levels of productivity. The statistical findings confirmed a positive association between innovative culture and the scope of open innovation. However, elements of innovative culture effectiveness varies from high to low but often used as a benchmark metric for SMEs innovativeness. OCis beneficial to organisations by fostering innovative culture that would be able to increase knowledge on innovative products as well as achieving employee's efficiencies (Sanz-Valle et al. 2011). The results supported the hypothesis and suggested that organizational culture enhances commitment towards open innovation adoption and the relationship strengthens and improves SMEs performances.

Open innovation model acquire external ideas and knowledge from external parties and networking is crucial

Table 7: Model Summary for OCB

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.899	.809	.645	.44232

Table 8: ANOVA or OCB

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	54.522	18	54.522	62.743	.000(a)
	Residual	106.884	21	.869		
	Total	161.406	39			

Table 9: Model Summary for Organisational Culture

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.847	.717	.540	.55350

Table 10: ANOVA for Organisational Culture

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.685	15	52.685	59.605	.000(a)
	Residual	108.720	24	.884		
	Total	161.406	39			

Table 11: Model Summary for Managerial Ties

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.546(a)	.298	.195	.73207

Table 12: ANOVA forManagerial Ties

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	49.380	1	49.380	56.089	.000(a)
	Residual	106.370	34	.734		
	Total	155.750	35			

Table 13: Model Summary for Transactional Costs

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.715(a)	.512	.295	.62359

Table 14: ANOVA forTransactional Costs

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	109.552	13	54.776	128.877	.000(a)
	Residual	51.853	26	.425		
	Total	161.406	39			

and the forefront in innovative performance. The result indicated that firms that rely heavily on external interaction increases the ability to contact, acquire, use, and associate new and existing knowledge. Business activities are surrounded in networking and interpersonal relationships which influences on firms' to strategize the source of innovation. Managerial ties support companies through acquisition of necessary information and external resources which enables SMEs to be constantly innovative and able to produce innovative products. SME managers need to make efforts to establish and maintain personal ties with the external parties especially in emerging economy like Malaysia in order to conduct business and coordinate exchanges (Li, 2008; North, 2005; Peng and Luo, 2000).Managerial ties comprise of personal networking and the networking benefits SMEs through opportunities. Business ties and political ties provide direct impact towards enhancing opportunities of knowledge creation processes.

Transaction Cost has significant impact on open innovation adoption and the most significant factor is technology competencies. Today's productions need specific knowledge which is closely associated with innovation. Since most of the SMEs supply their products to large companies, they often need to develop technological based products to meet standards and in order to attain it, they need to explore and exploit opportunities, to increase their competencies rather than maintaining existing technology. Study furthermore demonstrates that SMEs competitive advantage is primarily

based on technology competencies as successful SMEs primarily tend to not only focus on core technologies but also on non-core technologies. Therefore, SMEs need to develop capabilities to test external technologies and to coordinate the integration of new technologies. By doing so, SMEs can synthesize and acquire technological knowledge and transform these ideas knowledge into applications. These solutions may address the rapid changes technological environments and to have controls with the changes in technological perspectives. Furthermore, open innovation paradigm would lead to the interpretation that SMEs must act accordingly with strategies to govern innovation by undertaking various possibilities to change the production directions.

Appropriation strategies need to be in place to resolve free riders problem, and SMEs need to understand the nature and choices and suitability of the appropriation mechanisms. This also depends on SMES choices on the degree of openness. Degree of openness is closely related to the differences in resource commitments, management commitment and mutuality and therefore different attitudes to appropriation may result in the use of different protection mechanism. The findings suggest that that stronger appropriation is associated with greater openness. However, greater sensitivity in resolving protection mechanisms depends on the complexity of the openness and therefore the suitability of mechanisms founded on legal protection or and non-legal protections may go some way to resolve the issues. It was also noted that the relationship between appropriation and open innovation differs according to information source. The extent of innovation collaboration and networking in SMES is strongly correlated with the type of appropriation strategies chosen.

CONCLUSION

The main objective of the study is to be a catalyst for innovation and to nurture a culture of innovation in SMEs. The acceptance and diffusion of OI are often a time-consuming process and SMEs has to initiate it before it can be answered, especially in view of the way in which success is measured in SMEs. Apart from the fact that the OI generated multiple solutions to problems, many other spill-over benefits have already been realised, including the branding of SMEs as an OI leader. The internal motivation and collaborative way of enabling innovating and huge opportunities associated with OI could ultimately have a very positive effect on a country's economy. Stimulating innovation in SMEs would mean enormous opportunities for local economic development and benefits of these opportunities could be gained through OI adoption. OI could clearly connect SMEs to previously untapped networks, innovators and potentially novel innovations aligned with unsolved problems. The level of innovations adopted by SMEs in developing countries is marginally lower than SMEs in developed nations and therefore implementation of OI could be beneficial to speedup diffusion process in enhancing products. OI should be endorsed by SMEs to stimulate a culture of innovation which will contribute towards optimisation of SME resources. Therefore, internal divisions, policies and procedures such as governance and compliance which could be a challenge considering the policies which the organisation has to comply in order to adopt OI. However, there would be an opportunity for SMEs in particular through local eco-system development that would stimulate SMEs growth and provide opportunities for a better future.

RESEARCH LIMITATIONS

This research is non-generalizable and therefore other industries should be incorporated to test the open innovation adoption. This research was conducted on cross sectional studies and therefore longitudinal study should be embarked along with any other characteristics that might be of interest of this subject. Convenience sampling was deployed in this study and other forms of sampling criteria could enlighten a different result.

RECOMMENDATIONS FOR FUTURE RESEARCH

Service sector is one of the most important sectors in SMEs and therefore future research is highly recommended to be conducted on service industries. Through enhancement in technology, SMEs capability in commercialising innovative ideas to other micro sectors would be another means of breakthrough of technology in smaller industries. The study also recommends that future research should investigate appropriability regimes as mediating factor to test the influential factors of open innovation adoption

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Full Length Research

The Africans' Attitude Towards Western Education Case Study: Sierra Leone (1800 - 1920's)

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Africa was viewed by the Europeans as an appropriate place for missionary work and an ideal area for the spread of Western education. Christian missions were very active in Colonial West Africa. It was through their establishment of educational institutions that people had access to Western education. The latter was the means through which Christian missionaries reached their objective that was teaching Africans to read the Bible and secure them to their faith. Effectively, their work bore a great success in Sierra Leone, which had certain significance in the sense that it was the first land on which the British missionaries set foot, and people had access to education. The target of this article is to clarify whether the bulk of the people were for or against Western education. What was Sierra Leoneans reaction towards the spread of this kind of education?

Key Words: Western education, Christian missionaries, Sierra Leoneans, schools, reaction, attitude.

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INTRODUCTION

The portrait of Africa painted by the colonial powers was one of a benighted people who were primitive and without history and culture. Europeans believed that they were the first who brought the light of civilisation to the African continent. But, they were profoundly wrong for the fact that education was not a new innovation for Africans. In fact, values and social behaviours could be also acquired through the daily life within the community as it was the case of African traditional education. Children were expected to learn correct speech and good behaviour from mothers and other teachers including all members of the extended family and the community as a whole. Through observation, imitation and participation, they learnt how to cope with their environment. For example, they learnt to farm, hunt, cook and build houses.

Broadly speaking, education can also be acquired within schools and colleges. So, it is in these educational institutions and through professional educators that all the education deemed appropriate for the learner is available. In the Sierra Leonean colonial context, this form of education is called Western or European. It was a monopoly of the Christian missions who provided people with education through the erection of schools because of their enquiry, especially in the urban centers. For most of the Christian missionaries, providing secondary or higher education was not so important, since they reached their aim in elementary schools. However, that did not mean that secondary and higher education were not offered. Indeed, most of these schools were boarding and physically separated from indigenous communities. But despite that, missionaries succeeded to some extent to form a Christian community comprising people of diverse origins who accepted the combination of Christian faith and Western way of life. So, what was the Sierra Leoneans' response to the spread of Western education?

Sierra Leoneans' Attitude Towards Western Education

Education was not a new innovation for Sierra Leoneans. While, the animists acquired it through non formal institutions including parents, elders and secret societies [(1)], Muslims acquired education through the teaching in Koranic schools. At the coming of colonialism, traditional education was not given a great importance in the colonial government's policy, which gave the priority to Christianity and endeavoured to spread Western education at any cost. This task was left almost entirely to the private enterprise of Christian missions [(2)]. Religious differences had directly affected access to Western education, in the sense that throughout the nineteenth century, the bulk of the people had diverse reactions towards the new European culture and civilization. Some were in favour of Western education, whereas others found it alien and couldn't adjust with it.

The Colony Residents' Attitude

In fact, there were antagonist attitudes among Sierra Leoneans, some welcomed missionaries with an open heart and this was due to their long contact with European traders and the need to learn their language and acquire their knowledge. Those were the Colony residents, the Creoles who found in Christianity an opportunity to get rid from their traditional culture [(3)]. By definition the term Creole is used to refer to the descendants of Settlers and Liberated Africans in Sierra Leone and to others who had cultivated their habits and had come to accept their way of living [(4)]. According to the historian J. B. Welbster, the Creoles had the ability to fill a buffer role in Great Britain's advance into Africa and they were the "interpreters of Western culture to Africans" [(5)].

Since they were in favour of Christianity, they undoubtedly accepted missionary education for the facilities and advantages it offered. Therefore, they accepted to adopt the new religion so as to get access to the white men's civilization. Effectively, they had access to education at Fourah Bay College (F. B.C.), which helped missionaries to fulfill their educational task. The fact that F.B.C. emphasized within its curriculum on learning Greek and Latin attracted them. Consequently, they became familiar, not only with British history and culture, but also with the history and culture of indigenous ethnic groups in Sierra Leone, as well as other parts of West Africa [(6)]. Since the Creoles praised Western education and welcomed missionaries' presence in Sierra Leone, the number of mission schools grew more and more.

Mission Schools and the Missionaries Educational Services

The Grammar School provided them with a curriculum containing subjects in English grammar and composition, Greek, mathematics, geography, Bible history, astronomy, English history, writing and music and the focus on Christianity. Later on, algebra was also introduced to the curriculum [(7)]. Missionaries provided cheap and efficient educational services. They taught them new values and new way of life because they tended to see everything un-Christian as 'uncivilized' [(8)]. In their initial instruction, missionaries focused on the use of the vernacular as a vehicle of communication. So, the Sierra Leoneans' response to the use of the vernacular was not what the missionaries had expected. People were not keen on the utilization of the native language in mission schools. They were in favour of English language because it was necessary for their commercial activities and a key tool to the European civilization. For them these schools were the means that would give them access to the secrets of the white power [(9)]. The knowledge of English was then the tool that assisted them to cope with the changes that took place in colonial Sierra Leone. Consequently, English was used,

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(1) Magnus O. Bassey, (1999), *Western Education and Political Domination in Africa*, Westport, CT, p.16.
(2) Ronald Oliver and Atmore Anthony, (1994), *Africa Since 1800*, Cambridge University Press, Great Britain, 4th ed, p. 124.
(3) Elezabeth Isichei, (1976), *History of West Africa since 1800,* Macmillan, Cambridge University, London, p.255.
(4) Kup, A. P., (1975), *Sierra Leone: A Concise History*, London, David and Charles Newton Abbot, Canada, p. 114.
(5) Irving Kaplan, (1976), *Area Handbook for Sierra Leone*, Washington, p.10.
(6) Daniel J. Paracka Jr,(2003), *The Athens of West Africa: A History of International Education at Fourah Bay College, Freetown, Sierra Leone* ,Routledge ,New York, p.7.
(7) History of the Grammar School. http://www.members.aol.com/matinc/Slyshistory.htm
(8) A.P. Kup, op.cit., p.63
(9) Magnus O. Bassey, op. cit., p. 54

then it became a Lingua Franca, so as to link the different tribes and expand education in West Africa as a whole [(10)]. Among F. B. C. graduates Samuel Crowther, who welcomed the Europeans and praised Western education and encouraged the spread of Christianity. In addition to his own language, he started studying the Temne language as a means of communication with the people of the hinterland of Sierra Leone [(11)]. He continued to have contact with John Raban, one of the few missionaries in Sierra Leone who gave a great importance to African languages. He realized that Yoruba, Crowther's mother tongue, was a major language. As a result, Crowther became an informant for Raban, who published between 1828 and 1830 three little books about Yoruba [(12)]. Besides, Samuel Crowther admired English language and praised its use, but this intention towards missionary education was not the same for all F. B. C. Members. While some of the African students were in favour of the instructions provided in this institution, others were against such view, among them Obadiah Moore, who was born at the village of York in 1849[(13)]. He reminded students,

> "You're African students in Africa. Your country expects much from you… study therefore from the African's point of view and not from the European's point of view. You have to change, clarify and carry forward our people's way and method of looking at things" [(14)].

In 1858, the Church Missionary Society (C.M.S.) began to have problems of staff, consequently, from 1859 to 1864, Fourah Bay College was closed. From the 1860's onwards, Sierra Leoneans in Southern Nigeria brought into circulation the Slogan "Africa for the Africans" [(15)]. This new self-awareness was heartily welcomed by the educated Africans in Sierra Leone. As a result, at the beginning of the 1870's, there was a desire among Sierra Leoneans to have their own university [(16)].

The Protectorate Residents' Attitude

The Mende Ethnic Group Attitude

The Mende were another ethnic group extremely responsive to Western education. Effectively, the Mende like the Creoles welcomed missionaries' work because they envisioned Western education as the tool that delivered them from obscurity and gave them a new vision about the world. In fact, Christians especially the Creoles and the Mende were given more opportunities to education through the spread of mission schools and they occupied high posts in government services.

Muslims' Attitude

This eagerness to mission schools was not present everywhere, for few Muslims had access to Western schools and were less privileged than Christians. As a result, they couldn't afford the jobs provided by the colonial administration and their task was restricted to the teaching in Koranic schools [(17)], which propagated Islam in that area, where teachers applied an educational system that varied from the recitation of the Koran by heart to instruction in reading and writing in Arabic [(18)]. As a result, the output of the Koranic schools was the emergence of a small elite who "could read with ease classical Arabic, write it fluently and know how to comment with great insight and feeling on the most difficult texts of Arab authors, translate them and devote themselves to writing poetry, literature or theology" [(19)].

In 1848, there were some 2,000 Muslims in Freetown : Mandinka, Susu, Fula and Aku. Muslim Creoles sought the same benefits as Christian ones. Some of them functioned from 1840 to 1870 as interpreters for the government such

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[(10)] Michael Crowder, (1968), *West Africa Under Colonial Rule*, London, Hutchinson & COLtd, London, p. 386.
[(11)] Andrew F. Walls, (1994), *Samuel Ajayi Crowther (1807-1891) Foremost African Christian of the 19 th c,* the International Bulletin of Missionary Research, Jan, 92, Vol 16 Issue 1,p.15-21, edited by G.H.Anderson, p. 10.
[(12)] Andrew F. Walls,p.10.
[(13)] Daniel J. Paracka Jr, op.cit., p.13.
[(14)] Ibid.
[(15)] Quoted by Geiss Imanuel, (1974), *The Pan-African Movement*, London, Methuen & Co Ltd, London, p.105.
[(16)] Quoted by Geiss Imanuel, p.105.
[(17)] Elizabeth Isichei. op. cit., p. 248.
[(18)] Michael Crowder, op. cit., p. 23.
[(19)] Quoted by Michael Crowder, p. 373.

as Mohammed Sanusi, an Aku, literate in both Arabic and English and was also a collector of West African Islamic Manuscripts [(20)]. Moreover in the protectorate, the Temne of the North, who were converted to Islam in the early eighteenth century [(21)], were less receptive to Western education. Therefore, they were prevented from the educational opportunities offered to the South [(22)]. Furthermore, when Crowther was appointed a schoolmaster to serve in the new villages founded to receive liberated Africans, he was encountered by the opposition of the representatives of Islam and the indigenous religions [(23)].

Actually, Muslims' attitude towards missionary education was unlike that of the Christians, in the sense that they didn't accept the religious-oriented education provided by missionaries. There was no compromise between Muslims and missionaries in religious matters. Moreover, they were not in favour of Christianity and mission schools because they had little contact with the outside world and considered missionary education as disruptive for the traditional society. Therefore, few of them attended mission schools and as a result, missionaries didn't have a great impact on them. According to A. Babs Fafunwa, Muslims refused to send their children to Christian schools because they were established mostly to convert children to Christian religion, which was considered as a threat to their religion [(24)]. Also, they refused Western education because they regarded it as irrelevant to their needs and would lead to a neglect of both local arts and crafts, as well as to a lowering of moral standards and a corruption of Islam [(25)]. Besides, they didn't allow their kids to attend missions' schools because they had no desire for their sons to be taught manual work, which could be introduced at home [(26)].

Furthermore, many parents didn't permit their girls to attend school beyond the age of twelve because they were afraid that they would occupy the professions traditionally held by men [(27)]. As a matter of fact, they were more reluctant to let their children go to missionary schools because they realized that missionaries believed in the superiority of their religion and the European civilization as well. They also recognized that missionary work alienated them from their culture and did not fulfil their aspirations. Their schools were not complements to traditional African education because they were based on Western models and taught by expatriate teachers, who denied the knowledge of the local environment.

Government Measurements to attract Muslims to Western Education

In order to attract Muslims to Western education, before 1900, the government attempted to introduce some subjects related to Muslims' interest such as Arabic in mission schools. In 1891 Muslim Youth had access to education at F.B.C with a grant to pay the teachers and in 1899, an elementary school was opened, so as to teach English and Arabic [(28)]. In 1903, Muslims in the colony petitioned to have their marriage, and their inheritance laws recognized [(29)]. Abdallah Quilliam, a Turkish Muslim, visiting Freetown, wrote in 1903:

> At the present time within the colony of Sierra Leone there are three distinct classes of individuals: Pagan races, Muslims and Professing Christians. As the law now stands the law courts of the Colony practically bastardise and disinherit the first two classes, who form more than 95 per cent of the total population of the area…[(30)]

But, despite the government's attempt, it couldn't affect them and get them away from their own religion. This reaction

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[(20)] Quoted by Michael Crowder, p. 64.
[(21)] Michael Banton, (1957), *West African City : A Study of Tribal life in Freetown*,London, Oxford University Press,I Badan Accra, p.17.
[(22)] John R. Cartwright, (1978), *Political Leadership in Sierra Leone,* London, Croom HelmLtd, London, p.42.
[(23)] A. P. Kup, op. cit., p. 156.
[(24)] Magnus O. Bassey, op. cit., p.41.
[(25)] LaNette Weiss Thompson, The Non Literate and the transfer of knowledge in West Africa. http://www.chronologicalbiblestorying.com/articles/non-literate_chapter_1.htm
[(26)] Elezabeth Isichei, op. cit., p.256.
[(27)] LaNette Weiss Thompson, The Non Literate and the transfer of knowledge in West Africa. http://www.chronologicalbiblestorying.com/articles/non-literate_chapter_1.htm
[(28)] A. P. Kup, op. cit., p. 64.
[(29)] Ibid, p. 65.
[(30)] Ibid

didn't mean that Muslims were not aware of Western education. They showed their awareness when they enhanced the government to establish schools for their children. In 1900, Governor Charles King Harman established a department of Mohamedan education to attract Muslims to Western education without affecting their religion and by 1911, five Muslim schools received government support [31].

Concerning Bo school, since most of the Mende and Temne pupils were Muslims Alpha Ahmed Tijan was appointed to the staff as Arabic teacher and he became as an intermediary officer between the European staff and the pupils [32]. By the end of the first five years at the school, the native teachers became boring as interpreters because they were surpassed in the educational field by some of the top class students. As a result, in 1911 the appointed prefects assisted in the actual teaching. To help them, a prefects' class was established to teach them more advanced lessons, including literature, elementary mathematics, general science, geography and political economy [33].

In the mid-twenty century, Muslims realized that they should provide their children with some kind of European education without neglecting their own religion. To fulfil this task, some Muslim bodies were involved so as to develop among Muslims a Western type of education. There were for instance, Madrassa Islamia and various friendly societies such as Murkaramin and the Temne Progressive Union founded by Kund Burah. In addition to that, he sponsored the Ahmadiyya Muslim Movement in Freetown [34], which played an important role in establishing schools with Western type curricula among Muslims [35]. Through these organizations eleven mosques were built to cater for the religious needs of his people [36].

The Animist Attitude

Unlike Muslims, the Animist did not represent a big obstacle to the spread of missionary education as Islam did. Traditional religions, on the contrary varied from one tribe to another. So, they couldn't form a contradictory force for missionaries' task. In this case, the link between religion and education was apparent here. Effectively, African traditional education was relevant to the needs of the African society because according to A. Babs Fafunwa, "African society regarded education as a means to an end and not as an end in itself" [37]. Accordingly, education is a life experience. It is a continuous process that should start at home, be formalized at school and continue to exist after school period during the human's experience in life. A Sierra Leonean educationist, the late Professor V.E.King (1967:2) had stated the basic philosophy of West African education:

> The individual is a member of a family and a community whose continuity is essential for the survival of the tribe……The land is the principal bond of unity, it being….the begetter of the unborn, the upholder of the living, the custodian of the dead….It is imperative, therefore youth should learn all this and, especially how he fits into the pattern of life [38].

CONCLUSION

Generally speaking, the Creoles had a higher level of education compared to that of the people in the Protectorate. Their acquisition of education opened for them avenues for jobs. In the early 1890's, they had occupied nearly half the senior posts in public service in Freetown and they dominated high positions in the government's sphere as clerks, doctors, lawyers, administrators etc [39]. Among them Samuel Lewis (1834-1903), the most famous of the early Krio lawyers, who accepted to be among the membership of the Legislative Council in 1882 so as to serve his people honourably, James Africanus Horton (1835–1883), the distinguished Army doctor and John Ezzidio (1810 - 1872), a recaptive Nupe, a big

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[31] A. P. Kup, op. cit., p. 65.
[32] History of Bo School. http://www.obba.org.uk/his.htm
[33] Ibid
[34] Sierra Leone Heroes,'Achievement of Independance'Sierra Leone Web
[35] Elizabeth Isichei, op. cit., p 249
[36] Sierra Leone Heroes,'Achievement of Independance'Sierra Leone Web
[37] Magnus O. Bassey, op. cit., p. 16.
[38] Ohuche R. O., (1991), *The Centrality of Education in Igbo Culture*, Institute of education, University of Nigeria, Nsukka, p.2.
[39] John R. Cartwright,p.42.

merchant and member of the Legislative Council in 1863 [40].

As regards the protectorate, the Southern Provinces of Sierra Leone welcomed to a large extent missions work. Thus the first lawyers, doctors and all those who had higher degree of formal Western education belonged to the Mende and Sherbro areas, including Dr. Milton Margai (1895-1964), Dr. Albert Margai (1910-1980), Siaka Stevens (1905-1988), in addition to other intellectuals[41]. It is noteworthy that, the seeds of missionary work were watered and actually bore fruitful results, since most Sierra Leoneans embraced Christianity and praised Western education. But, afterwards they became conscious of their race and considered missionary work with a critical mind.

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[40] Unknown, Sierra Leone, Africa Today, p 1128.
[41] John R. Cartwright, op.cit.,p.42.

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The Intertwined Relationship between Critical Thinking and English Proficiency: Evidence from Vietnam

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Thinking critically erects more formidable barriers for learners of English as a second language because they are required to not only think critically but also demonstrate their abilities in English. In case their English proficiency is deemed limited, they are depicted as manifesting lower levels of critical thinking competences. Despite being investigated in several contexts, few attempts have hitherto been made to examine the relationship between critical thinking and English proficiency in Confucian contexts because critical thinking is argued not to be valued in Confucian cultures. Therefore, this study is conducted with two objectives: (1) investigating such relationship in Vietnam where the influence of Confucianism can still be felt, and (2) exploring which specific aspects of critical thinking (i.e. arguments, deductions, assumptions, inferences, and interpretations) that Vietnamese students perform well and poorly. A sample of 40 undergraduates from three Vietnamese universities participated in the study by providing their results of International English Language Testing System (IELTS) as a means to evaluate their English proficiency and completing the Watson-Glaser Critical Thinking Appraisal. The quantitative analysis reveals that there is a positive and strong relationship between the participants' level of English proficiency and their critical thinking abilities. Also, among the five sub-tests of critical thinking, the inferential and interpretative skills share the highest results whereas the other aspects (argument evaluation, deductive reasoning, and assumptions) are found to be the most difficult.

Key words: Critical Thinking, English Proficiency, Vietnamese undergraduates, Confucian cultures

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INTRODUCTION

In Vietnam, the dearth of skilled workers with work-related competencies has received massive criticism for the high rate of unemployment (Oliver 2002). The report conducted on the job hunting of over ten thousand students in the period from 2009 to 2012 by the Centre for Forecasting Manpower Needs and Labour Market Information revealed that only 50 percent of students complied with the basic job requirements and only 40 percent of students were highly evaluated by employers (Ngoc 2015). Among the required competencies, English proficiency is placed centrally as a principal asset in Vietnam because graduates are expected to not only show proper understanding of the four macro skills (i.e. reading, listening, speaking, and writing) but also integrate these skills into communication, personal, and collaboration skills (Ketels et al. 2010). Nevertheless, the levels of English proficiency of both English major and non-English major students have been still limited which increases dissatisfaction with graduates' abilities from employers.

Singled out as one of the most predominant skills for the 21st century citizens, critical thinking (CT) plays an indispensable role in both students' accomplishment in tertiary level courses and crops of graduates' opportunities in the current competitive job market (Philip and Bond 2004); therefore, the application of CT within and beyond formal education contexts rises in importance. The ability to think critically encourages students to fully understand their subject-specific content and constructively respond to pressing problems. The learning progress also needs to be engaged in the activities which students evaluate new knowledge critically and bolster their problem-solving skills. With due of acknowledgement, a large body of evidence suggests that tertiary students should be more equipped with this skill (Belkin 2015) because they are not explicitly instructed to reason, argue, and solve problems during their studies (Pascarella et al. 2011).

The mounting comments from academic staff members to international students in Western universities has provoked more studies showing that Asian students obtain poor CT abilities (Durkin 2008; Robertson et al. 2000). However, there is a lack of empirical studies worked on Asian educational contexts because most of the comments about Asian students' CT are drawn from the investigations in English-speaking countries. Vietnam, as a country where the influence of Confucianism can still be felt in every aspect of the superstructure of the society (Nguyen et al. 2005), has encountered major barriers to foster CT. In fact, CT has been still in its infancy stage for Vietnamese tertiary students and has not appeared in any of official documents. Despite publicly acknowledged as an essential skill for learning, quite a few Vietnamese researchers have attempted to suggest the heavy emphasis on CT into the classroom (e.g. Cau 2013; Huyen2014) and only few empirical studies have been carried out in English classrooms so far (e.g. Trang 2014a).

The implementation of CT into second language (L2) facilitates students to sharpen communication skills, master different types of spoken and written language, and display creativity (Brumfit et al. 2005). However, CT erects more formidable barriers for L2 learners because they not only think critically but also demonstrate their CT in L2. In case students' L2 proficiency is deemed limited, international students are depicted as manifesting lower levels of CT competences (Floyd 2011; Lun et al. 2010). It is explained that CT requires the use cognitive resources in working memory whereas the use of a language also entails a considerable amount of those resources (Baddeley1998). As a consequence, there may not be adequate resources remaining for the satisfactory execution of CT if they are expended for lower language proficiency because of insufficient resources available in working memory.

The relationship between English proficiency and CT abilities has been under investigation in several contexts: Malaysia (Rashid and Hashim2008); Iran (Keihaniyan 2013); South Africa (Grosser and Nel 2013). As none of them belongs to Confucian countries, there is a need for more empirical evidence in such context. The reason is that CT portrayed as "cultural thinking" and Western skill is argued not to be valued in Confucian cultures (Atkinson 1997, p.89).Noticeably, prior studies have not further examined which components of CT abilities are students' strengths and weaknesses respectively. Therefore, this study is conducted with two objectives: (1) investigating the relationship between CT and English proficiency of Vietnamese tertiary students and (2) exploring which specific aspects of CT abilities that Vietnamese students perform well and poorly.

Using a sample of 40 undergraduates pursuing their degree at three different universities in Ho Chi Minh City (Vietnam), the findings reveal a positive relationship between participants' CT performance and their level of English proficiency. With regard to the five sub-tests (arguments, deductions, assumptions, inferences, and interpretations), the results are different from the prior research which states that both inferences and interpretations are Vietnamese students' best performance while argument evaluation is recorded as the poorest performance.

Contributing to the existing literature, this is the first study to rigorously examine the relationship of tertiary students' English proficiency and their CT abilities in the Vietnamese context. It helps to clarify whether the shortage of high proficiency in English is consistent with the poor performance in CT abilities among students in such Confucian culture. The paper provides strong evidence showing the intertwined relationship between CT and English proficiency and calls to teachers, policymakers, and educationalists for the need to create an educational system that promotes such life-long learning skills.

The remainder of the paper is organised as follows: Section 2 presents the literature and outlines the development of the research hypothesis. Section 3 describes how data is collected and sampled. Section 4 outlines the methodology and measures. A section 4 reports empirical result with the discussion is followed up. Section 5 generates the conclusion.

LITERATURE REVIEW

English proficiency in Vietnam

Issued in 1986, the “Open Door” (DoiMoi) policy has attracted unprecedented attention from all stakeholders and marked a noticeable shift in rising the perceived value of English language. Accordingly, the national consensus on the need to learn English results in the rapid growth and massive expansion of learners. In addition, the approval of National Foreign Language 2020 Project with substantial efforts to raise the quality of teaching and learning foreign languages has also witnessed a perceptible change of Vietnamese students’ English language skills from a “low proficiency” toward a “moderate proficiency” country based on the annual report of The Swiss Education First English Proficiency Index in 2017. In accordance with the government’s promulgation of successive policies, more Vietnamese tertiary institutions have increased in number to integrate standardised English proficiency tests, for instance, IELTS (International English Language Test System), TOEIC, or design self-developed tests as means of graduation standard control into academic study programmes (Nguyen and Burns 2017). In terms of IELTS, a report on its official website *(*www.ielts.org*)* about overall band scores for Academic test takers in 2015 revealed that Vietnamese candidates achieved 6.0 which could be classified as level B2 based on the Common European Framework References for Languages (CEFR).

In spite of the positive reports, Vietnamese university students’ English proficiency is still far from satisfactory. At a hearing of the National Assembly held in Hanoi in 2016, groups of educational experts and the Minister for Education and Training argue that crops of graduates have unsatisfactory English proficiency. Despite the fact that Vietnam has tried to improve English language skills among Vietnamese students, their proficiency is still regarded lower with a strong exam-oriented focus playing a significant role. Most Vietnamese employees display a very low-level of communicative competence in English, which leads to a doomed fate that they could not be offered jobs in multinational companies. A study of Do (2012) showed that 90% of 990 junior non-English major students from five universities in Vietnam did not reach the language requirements from employers because they only scored between 360-370 points on the TOEIC (Test of English for International Communication).

Critical thinking

Despite being widely acknowledged and referred as the promise land (Papastephanou and Angeli 2007); CT has been a buzzword with a plethora of definitions (Ennis et al., 2005; Moseley et al. 2005, Stenberg et al. 2007). These experts, however, entirely concur that CT involves an ability to produce a satisfactory outcome by applying rational thinking in a goal-oriented fashion. Indeed, an approach to understanding CT is through the concepts of employing reasoning, making judgments, demonstrating procedural knowledge, providing reflection, and giving justification (He et al. 2013). In other words, Halpern (2014, p.8) posits that a critical thinker is a person who displays “purposeful, reasoned, and goal-directed” thinking which is also described by solving problems, formulating inferences, calculating likelihoods, and making decisions. Regarding mounting CT definitions, Lloyd and Bahr (2010) emphasise a need for a precise and consistent definition because the diversity remains problematic (Tanner 2005). As stated by Knight (2007), without clear understanding and conceptualisation of what CT means, the assessment of students’ work cannot be fair and valid.

Extending beyond being taught separately, a significant portion of empirical evidence points out the effectiveness of CT’s integration into subject-based instruction (Beyer 2008; Mazer et al. 2008). Accordingly, the implementation of CT is congruent with the demanding requirements for profound subject-matter teaching in which learners are able to bolster their thinking quality in the specific subject and sharpen their subject-matter learning.

The conceptualisation of CT used in this study is in accordance with the primary research purpose to investigate the relationship between English proficiency and CT; therefore, it is a prime focus on its multi-dimensional interrelated cognitive nature (Facione 2011; Halpern 2007). Theoretically, the multi-dimensional nature of CT, according to Kong and Seng (2004), entails two aspects. First of all, CT refers to how dispositions develop which aims at seeking to discover the truth, simulating interests and looking for reliable information. Secondly, it is in line with the growth and practical use of interrelated cognitive and meta-cognitive skills which require the abilities of problem-solving, meaning expression, relationship identification, credibility assessment, element identification in order to reach logical conclusions and publish coherent results. This bodes for the CT abilities on which the Watson Glaser Critical Thinking Appraisal (WGCTA) that was employed in the research context. In detail, being critical means (1) making inferences, (2) testing assumptions, (3) interpreting conclusions, (4) evaluating conclusions, and (5) evaluating arguments (Watson and Glaser, 2002). This definition is consistent with the review of Cheung et al. (2002, p.505) which also lists interpretation, analysis, arguments, inferences, and deduction as prominent features of many CT definitions.

Language proficiency and Critical thinking

CT is a key driver and a central focus when linked to language learning because language learners acquiring CT could think creatively to accomplish the curriculum outcomes, make decisions, solve problems, and gain lifelong learning

(Mahyuddin et al. 2004). The promotion of CT into the foreign language classrooms, as highlighted by Rafi (2011), is highly correlated with students' achievements; therefore, they broaden and evaluate their learning process on their own ways, and grasp the meaning of learning a language. Also, a growing body of evidence addresses the role of CT in enhancing the acquisition of English language, for instance, writing ability (Rafi 2011); language proficiency (Liaw 2007); oral communication skills (Kusaka and Robertson 2006). Rafi (2011) specifies that there is a close relation between the development of language learning and thinking skills because learners may reach the higher level of language proficiency through the encouragement of CT support along the lessons. With regard to the influence of language proficiency as a contributory factor to CT performance among university students, Bauer et al. (2006) pinpoint that the level of language proficiency has come to the fore as a possible solution to form clear opinions.

In order to explore the relationship between English proficiency and CT abilities, a body of empirical evidence from academics leading to mixed results on such relationship has been accumulated. The study of Keihaniyan (2013) undertaken on 100 Iranian undergraduates establishes a positive relation between critical thinking ability and English proficiency. These findings align with the prior study of Rashid and Hashim (2008) as Malaysian undergraduates are able to display their CT abilities well if they reach the high level of English proficiency. Take it further, the findings of Keihaniyan (2013) also imply that a majority of participants cannot shape their CT because their poor English language skills are linked with the habit of relying heavily on rote-learning. Thus, it suggests that explicitly instructing CT contributes to the effectiveness and deeper impression of language learning. The study of Manalo and Sheppard (2016), contributing to the existing literature, reports that Asian students in English-speaking countries are unable to display the same level of CT compared with their Western counterparts because they lack adequate English proficiency. Their results point out the influence of language proficiency on how students produce evaluative language because less proficient users need more cognitive processing resources which leads to the limitations of remaining resources for the expression of CT.

Although the three mentioned studies clarify the relationship between CT and English proficiency, there are still some questions left to be answered about the research instruments. In detail, the study of Keihaniyan (2013) only covers the evaluation of speaking skills through the Preliminary English Test, which is insufficient to describe the holistic picture of each participant's English proficiency. According to Zhang (2013), the ability to pronounce a sentence correctly, express ideas with proper intonation is not enough to satisfy the whole demand for L2 learning. By the same token, Manalo and Sheppard (2016) measure English proficiency by using TOEIC but this version only covers English listening comprehension and reading skills. As stated by Nicholson (2015), this TOEIC version is inappropriate for its intended purposes as an indicator of language ability and fails to be a reliable and valid measurement of English language proficiency. Moving to the research of Rashid and Hashim (2008), the translated version of the Cornell Critical Thinking Test into Bahasa Malaysia is employed as a mean to test the participants' CT abilities. Baddeley (1998) compares the adoption of cognitive resources in working memory when performing CT and using language simultaneously as a considerable challenge for L2 learners to demonstrate CT effectively; therefore, the implementation of participants' first language to measure CT abilities cannot construct a clear picture of the relationship between CT and English language proficiency.

In an attempt to investigate which sub-tests are performed well and poorly, the findings have still been limited. Only Grosser and Nel (2013), when examining the relationship between CT and the academic language proficiency of South African prospective teachers, report that participants performed the sub-tests of inferences and interpretations poorly. The information about students' good performance on sub-tests was not listed in the data analysis.

Taken together, to the best of the author's knowledge, there are limitations on the relation between CT abilities and English proficiency as well as students' performance on specific sub-tests. They suggest that there still remains a sustained effort for extensive exploration on such mentioned research gaps.

METHODS

Participants

Initial attempts for the group of voluntary participants were made through a post on Facebook. It was composed to provide information about the requirements of English proficiency, the length of the CT test, and the research aim. As a result, the data sample for this study was made up of 40 students whose IELTS results were still valid for a period of two years since the test date. All of them are third-year and fourth-year students from three universities in Ho Chi Minh City (Vietnam). As their scores ranged from 4.5 to 6.5, they were classified into two equivalent Common European Framework References for Languages (CEFR) due to the explanation of Cambridge English Scale (IELTS 4.5/ 5.0: B1, IELTS 5.5/ 6.0/ 6.5: B2). Nine (22.5%) of participants achieved level B1, whereas 31 (77.5%) reached level B2.

All the participants were informed that their participation was anonymous and voluntary; therefore, they were able to withdraw from the research at any time. The assurance was given to the participants that their results would be treated confidentially.

Instrument and Procedure

The online questionnaire includes two main parts: (1) the subjects' IELTS results, and (2) 59 question items in which they demonstrate their high levels of abstract and logical thinking, commitment and attitudes or habits of mind.

Concerning IELTS, it is widely accepted as a valid and reliable mean of language assessment in which students' level of English proficiency is identified and verified (Charge and Taylor 1997). As argued by Bayliss and Ingram (2006), although IELTS is meant to indicate whether a student has a sufficient level of English proficiency to cope with the linguistic demands of the studies in tertiary context, it does not imply that they will succeed academically or that they will not struggle linguistically.

In order to measure students' CT abilities, the free sample WGCTA test on the website assessmentday.co.uk was chosen because of limitations in the budget. This 59-item test addresses five sub-tests of CT abilities: analysing arguments (17 items), deduction (12 items), assumptions (14 items), inferences (10 items) and interpreting information (6 items). The WGCTA was employed in this research because its aforementioned five components were closely related to prime CT factors identified in the major literature.

The scores obtained can predict success and training outcomes in a range of applied and academic settings (Wagner and Harvey, 2013). The common test format contains 40 questions within a 30-minute period or 80 questions within a 60-minute period. Based on the recent empirical evidence of Gadzella et al. (2006) and Wagner and Harvey (2006), the test is conceived as a valid testing instrument because it ensures the degree of reliability and validity.

In this research, total scores range from 0 to 59, with higher scores reflecting greater CT abilities. The first section "analysing arguments" requires students to assess if each argument based on the given scenario is strong or weak. Accordingly, the argument is perceived to be strong or weak if there is a direct or indirect relation with the question or statement. The next part is "deductions" in which students carry out their evaluation of a list of deductions made based on the provided passage of information. In the third section "assumptions", it requires students to decide whether or not an assumption has been made in making the statement. The fourth part "inferences" aims to provide a passage of information on a scenario in which students rate the reference in terms of five options (i.e. true, possibly true, more information required, probably false, and false). The last section "interpreting information" asks students to interpret information in the given paragraph of information by deciding whether each conclusion follows with regards to the presented information. All of the five sections are designed to find out how good an individual student is at making analytical and logical reasons by both displaying their thinking skills and English language proficiency. Therefore, this assessment has the content validity as it matches the objectives of the study (Bachman, 1990). In terms of reliability of the questionnaire employed in the present study, it is 0.75 using Cronbach's apha coefficient of internal consistency which reaches a satisfactory level (Nunnally and Bernstein, 1994).

Approaches to Analysis

Regarding CT results, each section's result (i.e. analysing arguments, deductions, assumptions, inferences, interpreting information) was initially converted into ratio because the number of questions is not equal. Next, data gained through the IELTS and CT results were analysed quantitatively by using STATA version 14 statistics software. This aimed to test the statistical meaning of each participant's scores.

EMPIRICAL RESULTS AND DISCUSSIONS

As depicted in *Table 1*, the overall average of students' whole CT test (CTR) is 23.225 out of a total of 59 points with the minimum total score of 9 and maximum score of 32. The mean score of their English proficiency (EP) is 5.713 with the minimum of 4.5 and the maximum of 6.5. CT abilities are measured by the five sub-tests: arguments (ARG), deductions (DED), assumptions (ASSUM), inferences (INFER) and interpretation (INTER). The mean of ARG, DED, ASSUM, INFER, and INTER are 0.315, 0.444, 0.361, 0.460 and 0.483, respectively.

Table 2 shows that the correlations between students' English proficiency and their CT abilities (whole test and sub-tests) on six sets of data (EP-CTR, EP-ARG, EP-DED, EP-ASSUM, EP-INFER, EP-INTER) are all very similar: EP correlates with CTR ($r=0.9037$, $p<0.01$); EP with ARG ($r=0.6490$, $p<0.01$); EP with DED ($r=0.6367$, $p<0.01$); EP with ASSUM ($r=0a.7843$, $p<0.01$); EP with INFER ($r=0.6696$, $p<0.01$); and EP with INTER ($r=0.5332$, $p<0.01$). These results suggest that each component of the CT test (i.e. arguments, deductions, assumptions, inferences, and interpretations) is

positively correlated with the level of participants' English proficiency. The present findings are consistent with prior studies of Floyd (2011), Keihaniyan (2013), Lun et al. (2010), Patron (2005), and Rashid and Hashim (2008), which indicate that both English proficiency and CT are closely tied together because higher levels of English are associated with higher results in CT test.

Table 1: Descriptive statistics

	Mean	Median	Std.	Min	Max
CTR	23.225	22	0.926	9	32
ARG	0.315	0.294	0.017	0.059	0.529
DED	0.444	0.417	0.022	0.167	0.75
ASSUM	0.361	0.357	0.017	0.143	0.571
INFER	0.460	0.450	0.026	0.1	0.8
INTER	0.483	0.5	0.037	0	1
EP	5.713	5.5	0.096	4.5	6.5

Table 2: Correlation matrix

	EP	CTR	ARG	DED	ASSUMP	INFER	INTER
EP	1						
CTR	0.9037*	1					
ARG	0.6490*	0.7458*	1				
DED	0.6367*	0.6715*	0.2316	1			
ASSUM	0.7843*	0.8089*	0.5352*	0.4736*	1		
INFER	0.6695*	0.7701*	0.5154*	0.4635*	0.4899*	1	
INTER	0.5332*	0.6237*	0.3537	0.2536	0.4524*	0.2944	1

$*p < 0.01$

This study further tests whether there are mean differences of CT test score between two groups participants based on how they are proficient in English. As mentioned above, B1 represents students who achieved IELTS 4.5 or 5.0, whereas those scoring IELTS 5.5 or 6.0 or 6.5 are classified as B2. Accordingly, alternative hypotheses are formulated as follows:

H0: *There is no mean difference between B1 and B2 concerning their performance in whole test and sub-tests.*
H1: *There exists mean difference between B1 and B2 concerning their performance in whole test and sub-tests.*

Table 3 reports the results of the pair-sample t-test of six sets of data. In overall, the p-value of each set is less than 1% or 5%, which states that the mean of B2 is higher than B1. Concerning the whole CT test and each section of the test (i.e. arguments, deductions, assumptions, inferences, and interpretations), students with higher level of English proficiency perform their CT abilities well than those with the lower level of English proficiency. This finding aligns with the conclusion of Tian and Low (2011) and Manalo and Sheppard (2016) that better language skills considerably become a significant factor affecting CT. In detail, if students whose English is less proficient (e.g. lack of linguistic knowledge), their working memory is insufficient to satisfy the higher cognitive processing resources and their CT demonstration appears less effective. Compared with the group of B2 participants, B1 students' CT abilities are fraught with insurmountable difficulties by means of language use. They are unable to advance adequate understanding, give coherent expression, make reasonable assumption, draw logical inferences, and construct strong arguments with deeper levels of thought. These findings, therefore, advocate that English mastery is a significant factor contributing to how students display their CT.

After confirming the existence of a significant, positive relationship between CT and English proficiency of Vietnamese students, this study also examines the relationship between every two sub-tests to find out which one is students' strength and which one is their weakness.

As evinced in Table 4, the p-value of the first four sets is less than 1% or 5% which states that the mean of ARG is the smallest (ARG=0.315, ASSUM= 0.361; DED=0.444, INFER= 0.46, and INTER=0.483). Moving to the next three sets of data, the mean of DED is smaller than the means of both INFER and INTER (0.444 <0.46; 0.444<0.483) with the p-

Table 3:Two sample t-test results for whole test and five sub-tests based on English proficiency					
		Mean	**t**	**Two-tailed p**	**n**
CTR	B1	17.333	-4.050	0.000	9
	B2	24.936			31
ARG	B1	0.248	-2.216	0.033	9
	B2	0.334			31
DED	B1	0.352	-2.381	0.022	9
	B2	0.470			31
ASSUM	B1	0.246	-4.285	0.000	9
	B2	0.394			31
INFER	B1	0.355	-2.301	0.027	9
	B2	0.490			31
INTER	B1	0.315	-2.620	0.013	9
	B2	0.532			31

Table 4: Two independent sample t-test results for five sub-tests				
	Mean	**t**	**Two-tailed p**	**n**
ARG	0.315			
DED	0.444	-5.277	0.000	40
ARG	0.315			
ASSUM	0.361	-2.785	0.008	40
ARG	0.315			
INFER	0.460	-6.491	0.000	40
ARG	0.315			
INTER	0.483	-0.337	0.000	40
DED	0.444			
ASSUM	0.361	4.035	0.000	40
DED	0.444			
INFER	0.460	-0.651	0.519	40
DED	0.444			
INTER	0.483	-1.039	0.305	40
ASSUM	0.367			
INFER	0.460	-0.199	0.000	40
ASSUM	0.367			
INTER	0.483	-3.698	0.000	40
INFER	0.460			
INTER	0.483	-0.606	0.548	40

value is less than 1% or 5%. Among the five sub-tests, the inferential skill and interpretive skill are Vietnamese students' strengths while argument evaluation records their poorest performance.

Interestingly, the findings of the inferential skill and interpretative skill are completely contradictory to the prior study of Grosser and Nel (2013) when they indicated that the sub-test of making inferences and interpreting information appeared to be the most difficult. Making inferences, based on their explanation, is the only sub-test with five possible solutions (e.g. true, probably true, more information required, probably false, and false); therefore, each participant was given 25% chance of having correct answers compared to the other sub-tests. Furthermore, their findings were supported by Kong and Seng (2004) as the skill of making inferences was related to experiences and personal understanding of an issue rather than being practically measured by selecting one specific answer. They also highlighted that the information in the test scenarios unconnected with the participants' source of knowledge was attributed to their poor results in the subtest "inferences". However, in the present study, the inferential was found to

pose less problematic challenges for Vietnamese students. It might be explained that Vietnamese participants did not struggle with the two linguistic problems of inference making (unfamiliar words and inability to get explicit content words) that were mentioned in the study of Mulyaningsih et al. (2013). The poor results of both inferences and interpretations could also lead to the ineffectiveness of comprehension skills (Grosser and Nel2013); however, the positive performance of Vietnamese participants in such these skills are supported by Pienaar (2001) to be connected with the process of more thorough and effective critical evaluation.

In terms of the sub-test “arguments” and “assumptions”, the findings are inconsistent with what Grosser and Nel (2013) concluded before. As stated by the two authors, both sub-tests were the least difficulty because of the highest means achieved. Nevertheless, Vietnamese participants in this research were found to encounter considerable difficulties when determining whether certain conclusions or arguments necessarily followed from given information. Regarding the sub-test “deductions”, it is explained that the performance in deduction is linked with the difficulty to assess and interpret the credibility of statements (Facione 2011).

CONCLUSION

The present research attempts to investigate the relationship between English proficiency and CT abilities through the scope of Vietnamese tertiary level. The empirical evidence collected from the analysis of quantitative data assists to clarify the two aforementioned research objectives. Firstly, the findings confirm that English proficiency is a contributing factor in participants’ performance of CT. Secondly, among the five sub-tests in the WGCTA, the inferential and interpretive skills both share the most positive performance compared to the other three skills (i.e. arguments, deductions, and assumptions).

As can be seen from the analysis, the CT abilities of Vietnamese undergraduates participating in the study are still limited; therefore, there is a need to not only bolster students’ English level of proficiency and their CT performance but also draw attention for the importance of CT. In terms of pedagogical suggestions, the teaching approaches and activities together with the assessment should be in line with the objective to integrate CT. As a result, students are provided more valuable opportunities to master their English skills and gradually develop the abilities to think critically. Regarding the five sub-tests, the lessons should be engaged with introducing these terms to students so that they are able to build up their awareness. By the same token, more practical chances with specific techniques might further enhance their performance.

In the research, IELTS is utilised as to evaluate participants’ English proficiency; however, in order to obtain more reliable information about their proficiency, future researchers might narrow down the valid test dates from two years to one year or five months, or require participants to take part in an English proficiency test at the same time. Due to the limitations of budget in the research, future investigations should be adopted withan updated version of WGCTA to produce more details about students’ CT abilities.

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Full Length Research

Teacher Stress and Satisfaction in Bayangol district of Ulaanbaatar Schools

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In this research, we examine how the frequency of use of social access is connected to teacher stressors, job satisfaction, career intentions, professional engagement, and awakening of stigma associated with teacher stress. Using data from self-evaluation question lists (164=n) from teachers in Bayangol District of Ulaanbaatar City, we found that teachers almost never spoke of their stress to their health care providers and instead used the family, fellow teachers, friends, and sometimes their principals. The frequency with which teachers accessed different social support networks differed according to the upsetting thing. Teachers who often spoke of stress to their friends had a weak sense of career plan and professional commitment. Men were less likely to talk to their different social supports for stress. This research adds to the studies by exploring the frequency of contact with and the use of social supports and their effect on teacher stress on teaching.

Keyword: Teacher, stress, career, satisfaction, Mongolia

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INTRODUCTION

Objective: In our previous study, we examined different parts of teacher stress in the Bayangol district of Ulaanbaatar. We examined the number of stress, the factors that cause stress and the mark of shame of stress among teachers (Odgerel, 2016). We also studied stress factors that predict two dimensions of teacher stress (anxiety and depression) and teacher job satisfaction (Ferguson, 2012). We wanted to know more about social support opportunities that affect teachers' stress and other factors that increase stress in their working lives. In this article, we extend our analysis from our previous work (Odgerel, 2016; Ferguson, 2012) to explore the effect of social supports in terms of the frequency with which teachers spoke of stress to others.

Teacher Stress: Since the 1970s, work stress and the troubling relationship between the thing and tension have been a popular topic see (Bowling, 2015) and work-related stress is linked to illness (Cooper, 2001). Also (Hogeun Park, 2017; Nixon, 2011), absenteeism (Cooper, 2001), negative worker attitudes (Hogeun Park, 2017) and poor professional commitment (Chen, 1992). Teacher stress can be defined as "a teacher's experience of unpleasant and negative feelings of love, hate, fear, etc., such as anger, fear and stress, tension, frustration or depression resulting from certain

aspects of their work" (Kyriacou, 2001). In 2012, Mongolian Teachers' Federation reported that six out of ten teachers showed that their work was more stressful than it was two years earlier. A 2015 study by Mongolia Teachers on Education Graduates found that "working conditions were too stressful" (UNESCO, 2015). The problem of teacher stress research is largely not only in Mongolia. For example (Leung, 2009) 38.6% of secondary school teachers in Hong Kong report high levels of inappropriate stress, in addition to 30.3% suffering from extreme fear and stress at school. Very bad and 12.3% extreme to very bad depression. In their study (Bannai, 2015), it was reported that 47.8% of boys and 57.8% of girls in secondary school were at work.

METHODS

This research extends the analysis of data before that reported by (Odgerel, 2016; Ferguson, 2012). As we have explored the number of stressors, the factors that cause stress and the stigma of teachers' stress (Odgerel, 2016) and the stressors predict fear and stress and depression (Ferguson, 2012) have not yet explored the relationship between teacher stress and social supports. Therefore, the list of questions and data collection are the same as these previous studies, but are also examined here.

Modeling the list of questions on existing forms and using response formats and instructions that have already been tested increases the validity and reliability of the list of questions (Slavin, 1984). The data from this study were collected from a list of self-reported questions developed from teachers' stress books. The research of (Kyriacou, 1978; Fimian, 1984; Borg, 1991; Manthei, 1996) and the British Columbia Teachers' Federation served list of questions. The list of questions included eight different sections related to teacher stress as well as information on the people section. The sections of the list of questions we use in this document are as follows:

- Participants were asked to rate 26 teaching-related stress factors on a 5-point scale of not at all stressful, mildly stressful, moderately stressful, very stressful, and very stressful.
- Participants were asked to show how often they discussed stress with other teachers, their principals, their friends, their family, and their doctors on a five-point scale of never, rarely, sometimes, often, and always.
- Participants were asked if they believed there was a perceived mark of shame about teacher stress using a 5-point scale of no mark of shame, mild mark of shame, not extreme/medium-level mark of shame, many marks of shame, and the extreme mark of shame.
- Participants were asked to show their job happiness using a 5-point scale of very dissatisfied, somewhat dissatisfied, neither satisfied nor dissatisfied, fairly satisfied, and very satisfied.
- Participants rated their career intent and career commitment using a 5-point scale of very unlikely, somewhat unlikely, neither likely nor unlikely, fairly likely, and very likely.
- Participants completed demographics questions, including gender, age, years of experience in teaching, grade level and current teaching assignment.

RESULTS AND DISCUSSION

The purpose of our research was to investigate the relationships among the frequency of utilization of social supports and stress factors, the stigma of teacher stress, job satisfaction, career intent, career commitment, and demographic characteristics. We found that teachers experiencing workload stress were more likely to talk to their friends, family, and fellow teachers. Teachers enrolled in additional qualification courses through the National University of Mongolia received a list of questions.

The study sample included teachers living in the Bayangol district of Ulaanbaatar. To identify teachers in Bayangol District, participants with a postal code beginning with the letter "B" were given a list of questions. The "B" postal code area covers a large geographic area of Bayangol District includes 59 school boards and controlled groups. On the list of 266 questions that were posted, 174 lists of questions were returned, giving a response rate of 48%. For our social supports research, 164 question lists were available for the study. The teachers who responded to the survey were 25 to 64 years old, 120 (83.3%) were women and 44 (16.7%) were men. Years of teaching experience ranged from new teachers to experienced teachers with over 30 years of classroom experience. Almost the same as representation in Mongolian school systems, a higher proportion of women than men taught at lower levels (Statistics Mongolian, 2017). Men were more likely to have taught the middle and upper classes.

We used a Main Component Analysis (MCA) to reduce the 26 stressors to a smaller number of orthogonal pieces that could be included in something in a retrograde analysis. An early MCA using all 26 sources of stress in the survey,

Table 1. Principal Component Analysis Loadings for Sources of Teacher Stress

	Component 1: Workload	Component 2: Student Behaviour	Component 3: Professional Relationships	Component 4: Societal Attitude	Component 5: Employment Conditions
To do too much work	.857				
Not enough time to do the work	.796				
Lack of time for marking	.750				
Inadequate preparation time	.732				
Balancing home and school responsibilities	.732				
Increase in workload	.601				
Lack of time to assist individual students	.584				
Taking courses while working full time	.574				
Completing report cards	.496				
Class size	.495				
Split grade classrooms	.416				
Shortages of materials	.413				
Being accountable for student achievement	.391				
Extra-curricular responsibilities	.352				
Completing IEPs	.270				
Changes in the curriculum	.229				
Poorly motivated students		.830			
Students' attitudes towards work		.730			
Mixed ability of students in classroom		.661			
Individual students who continually misbehave		.594			
Impolite and disruptive behaviour of students in general		.561			
Students with difficulties at home		.249			
Relationship with principal or vice principal			.855		
Attitudes and behaviour of the principal			.846		
Lack of communication with administration			.832		
Lack of participation in decision making			.564		
Relationships with other teachers			.238		
Relationships with support staff			.156		
Undeserved criticism of teachers and schools				.711	
Lack of recognition for the contributions of teachers				.694	
Lack of respect in society for schools and teachers				.677	
Dealing with parents				.247	
Poor opportunities for promotion					.729
Inadequate salary					.676
Job security					.581
Lack of training and professional development					.510

revealed that nine of the 26 sources were either interspersed with many pieces or were unrelated to any part, a result almost identical to that of (Ferguson, 2012). These nine factors were left out of the analysis of the main late papers

reported in Add-on (Table 1) as is common practice.

In order to assess the relationship between stressors and social support networks, we used receding ordinal logistics to predict the regularity with which a teacher talked about stress to each of the five social support groups: family, friends, other teachers, and their doctors, because the answers were measured in ordered categories never, rarely, sometimes, often and always.

CONCLUSIONS

In this study, show that teachers almost never spoke to their students and instead use family, friends, fellow teachers and sometimes their principals. Teachers, however, were clearly not always comfortable talking about anything that upset their principals, especially the stress of industrial relations. The men in our study were less likely to talk to their different social supports for stress. There seems to be a mark of shame on teachers 'stress because teachers who felt there was a slight mark of shame on teachers' stress were less likely to talk about stress to their colleagues. As one teacher commented in the open comments section, "Teachers are the most likely to denounce shame, often when teachers express stress, comments such as" if you cannot handle it, leave "."We also found that there was a higher level of job satisfaction among teachers who spoke less often about stress with their friends and managers, and those who spoke often to their friends. These two results can show that Teachers with high job satisfaction, career intention and professional commitment are likely to use other coping mechanisms than social supports. The use of social supports may not be sufficient to combat stress and affect job satisfaction, career intention and professional commitment.

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Full Length Research

Physical activity, Nutrition and wellbeing; A narrative review

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Insufficient physical activity and poor nutrition is a key risk factor for non-communicable diseases (NCDs) such as cardiovascular diseases, cancer and diabetes This paper discuses physical activity, nutrition and wellbeing. It is a position paper in which importance of physical activity and nutrition to achieving wellbeing was discussed extensively from different researcher's point of view and specifications for different age group were outlined. It was therefore concluded that Good nutrition; an adequate, well balanced diet combined with regular physical activity; is a cornerstone of good health and wellbeing. It was therefore recommended that all adults should avoid inactivity and engage in physical activities and Consumption of a healthy diet throughout the life course helps prevent malnutrition and non communicable diseases.

Key words: Physical activity, Nutrition, health, wellbeing

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INTRODUCTION

Inadequate physical activity and a sedentary lifestyle are important causes of many of the major diseases of developed societies, including coronary artery disease, stroke, hypertension, diabetes, obesity, osteoporosis, and arthritis. There has been an explosion of information over the past two decades on the health benefits of exercise. In addition, exercise and nutrition are closely linked, with each modifying the effects of the other.

Regular physical activity is one of the most important things you can do for your health (CDC, 2018) which includes biking, Walking, jogging, running, swimming etc. Inactivity of any form is not good for the body and overall health and this is affirmed by WHO (2018) that Insufficient physical activity is one of the leading risk factors for death worldwide and it is a key risk factor for non-communicable diseasessuch as cardiovascular diseases; like cancer and diabetes. Also, globally, 1 in 4 adults is not active enough; furthermore, more than 80% of the world's adolescent population is insufficiently physically active.

Consuming a healthy diet throughout the life course helps prevent malnutrition in all its forms as well as a range of noncommunicable diseases and conditions (WHO, 2015). But sadly, the increased production of processed food, rapid urbanization and changing lifestyles have led to a shift in dietary patterns. People are now consuming more foods high in energy, fats, free sugars or salt/sodium, and many do not eat enough fruit, vegetables and dietary fibre such as whole grains.

Non-communicable diseases kill 41 million people each year, equivalent to 71% of all deaths globally. Each year, 15

million people die from a NCD between the ages of 30 and 69 years; over 85% of these "premature" deaths occur in low- and middle-income countries. Continuation to the alarming statistic is that Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets (poor nutrition) all increase the risk of dying from a NCD (WHO, 2018).Achieving and maintaining health is an ongoing process, shaped by both the evolution of health care knowledge and practices as well as personal strategies and organized interventions for staying healthy. The importance of Physical activity and Nutrition cannot be underestimated in the overall health of an individual; hence this paper did a detailed review on the importance of Physical activities and nutrition on improving the health of an individual.

METHODOLOGY

This is a theoretical research on the importance of physical activities and nutrition to achieving wellbeing. As such, the method used was a systematic review process to search for different reputable journals on the importance of physical activities and nutrition to achieving wellbeing. Articles from international health agencies such as world health organization were also consulted.

Physical activity and Health

WHO (2018) defines physical activity as any bodily movement produced by skeletal muscles that requires energy expenditure – which includes activities undertaken while working, playing, carrying out household chores, travelling, and engaging in recreational pursuits. The term "physical activity" should not be confused with "exercise", which is a subcategory or type of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness. Beyond exercise, any other physical activity that is done during leisure time, for transport to get to and from places, or as part of a person's work, has a health benefit. Further, both moderate- and vigorous-intensity physical activity improve health (WHO, 2018)

Physical exercise is important for maintaining physical fitness and can contribute to maintaining a healthy weight, regulating digestive health, building and maintaining healthy bone density, muscle strength, and joint mobility, promoting physiological well- being, reducing surgical risks, and strengthening the immune system (Gremeaux et al, 2012). Some studies indicate that exercise may increase life expectancy and the overall quality of life (Gremeaux et al, 2012). Been inactive is not good for the body and health, the importance of been active includes the following;

Fitness

Individuals can increase their level of fitness following increases in physical activity levels (Dobbins et al, 2013). Studies have shown that exercising in middle age leads to better physical ability later in life (Medicine online, 2017). Early motor skills and development have also shown to be related to physical activity and performance later in life (Medicine online, 2017). Children who have more proficient motor skills early on are more inclined to being physically active, and thus tend to perform well in sports and have better fitness levels (Medicine online, 2017).

Cardiovascular system

The beneficial effect of exercise on the cardiovascular system is well documented. There is a direct correlation between physical inactivity and cardiovascular mortality, and physical inactivity is an independent risk factor for the development of heart attack and stroke. Low levels of physical exercise increase the risk of cardiovascular diseases mortality (American Heart Association, 2017). Furthermore, Children who participate in physical exercise experience greater loss of body fat and increased cardiovascular fitness (Lumeng and Julie 2006). Studies have shown that academic stress in youth increases the risk of cardiovascular disease in later years; however, these risks can be greatly reduced with regular physical exercise (Ahaneku et al, 2000).

Strengthening of Bones and Muscles

As one age, it is important to protect the bones, joints and muscles (CDC, 2018). Not only do they support your body and help you move, but keeping bones, joints and muscles healthy can help ensure that you are able to do your daily activities and be physically active (CDC, 2018). Research shows that doing aerobic, muscle-strengthening and bone-strengthening physical activity of at least a moderately-intense level can slow the loss of bone density that comes with age (CDC, 2018).

Cancer prevention

Physical activity is helpful in the prevention of some types of cancer. This is supported by a systematic review which evaluated 45 studies that examined the relationship between physical activity and cancer survivorship. According to the study results "There was consistent evidence from 27 observational studies that physical activity is associated with reduced all-cause, breast cancer–specific, and colon cancer–specific mortality" (Ballard-Barbash, 2012).

Cancer cachexia

Cancer cachexia means the systematic wasting of muscle tissue, with or without loss of fat mass that accompanies cancer disease. Physical exercise is becoming a widely accepted non-pharmacological intervention for the prevention and attenuation of cancer cachexia (Lira, Neto and Seelaender 2014).

Neurobiological

The neurobiological effects of physical exercise are numerous and involve a wide range of interrelated effects on brain structure, brain function, and cognition (Erickson, Hillman, Kramer, 2015; Paillard, Rolland, de Souto and Barreto 2015). A large body of research in humans has demonstrated that consistent aerobic exercise (e.g., 30 minutes every day) induces persistent improvements in certain cognitive functions, healthy alterations in gene expression in the brain, and beneficial forms of neuroplasticity and behavioral plasticity (Erickson, Hillman, Kramer, 2015; Paillard, Rolland, de Souto and Barreto 2015). some of these long-term effects include: increased neuron growth, increased neurological activity, improved stress coping, enhanced cognitive control of behavior, improved declarative, spatial, and working memory, and structural and functional improvements in brain structures and pathways associated with cognitive control and memory.

Longevity

Science shows that physical activity can reduce your risk of dying early from the leading causes of death, like heart disease and some cancers. People who are physically active for about 7 hours a week have a 40 percent lower risk of dying early than those who are active for less than 30 minutes a week. Also, the intensity of the exercise or activity does not matter. You can put yourself at lower risk of dying early by doing at least 150 minutes a week of moderate-intensity aerobic activity (CDC, 2018)

Depression

A number of medical reviews have indicated that exercise has a marked and persistent antidepressant effect in humans, (Cooney et al, 2013; Brené et al 2007) an effect believed to be mediated through enhanced Brain- Derived Neurotrophic Factor (BDNF) signaling in the brain (Mura, Moro, Patten and Carta, 2014). Several systematic reviews have analyzed the potential for physical exercise in the treatment of depressive disorders. The 2013 Cochrane Collaboration review on physical exercise for depression noted that it is more effective than a control intervention and comparable to psychological or antidepressant drug therapies (Cooney et al, 2013).

Sleep

A 2010 review of published scientific research suggested that exercise generally improves sleep for most people, and helps sleep disorders such as insomnia (Buman and King, 2010). The optimum time to exercise may be 4 to 8 hours before bedtime, though exercise at any time of day is beneficial, with the possible exception of heavy exercise taken shortly before bedtime, which may disturb sleep. According to Youngstedt (2005), exercise is the most recommended alternative to sleeping pills for resolving insomnia. Sleeping pills are more costly than to make time for a daily routine of staying fit, and may have dangerous side effects in the long run. Thus, Exercise can be a healthy, safe and inexpensive way to achieve more and better sleep (Youngstedt, 2005).

Weight control

Both diet and physical activity play a critical role in controlling your weight. You gain weight when the calories you burn, including those burned during physical activity, are less than the calories you eat or drink. When it comes to weight

management, people vary greatly in how much physical activity they need. You may need to be more active than others to achieve or maintain a healthy weight (CDC, 2018).

Reduction of Type 2 Diabetes and Metabolic Syndrome

Regular physical activity can reduce your risk of developing type 2 diabetes and metabolic syndrome. Metabolic syndrome is a condition in which you have some combination of too much fat around the waist, high blood pressure, low HDL cholesterol, high triglycerides, or high blood sugar. Research shows that lower rates of these conditions are seen with 120 to 150 minutes (2 hours to 2 hours and 30 minutes) a week of at least moderate-intensity aerobic activity. And the more physical activity you do, the lower your risk will be (CDC, 2018)

Specification of Physical activities

According to WHO (2018), the following are the specifications for healthy physical activities in Adults;

Adults aged 18–64 years

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or do at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, adults should increase their moderate-intensity physical activity to 300 minutes per week, or equivalent.
- Muscle-strengthening activities should be done involving major muscle groups on 2 or more days a week.

Adults aged 65 years and above

- Should do at least 150 minutes of moderate-intensity physical activity throughout the week, or at least 75 minutes of vigorous-intensity physical activity throughout the week, or an equivalent combination of moderate- and vigorous-intensity activity.
- For additional health benefits, they should increase moderate-intensity physical activity to 300 minutes per week, or equivalent.
- Those with poor mobility should perform physical activity to enhance balance and prevent falls, 3 or more days per week.
- Muscle-strengthening activities should be done involving major muscle groups, 2 or more days a week.

The intensity of different forms of physical activity varies between people. In order to be beneficial for cardiorespiratory health, all activity should be performed in bouts of at least 10 minutes duration (WHO, 2018)

Children and Adolescents

According to CDC (2008), the following are the specifications for healthy physical activities in children and Adolescents;

- Children and adolescents should do 60 minutes (1 hour) or more of physical activity daily.

- **Aerobic:** Most of the 60 or more minutes a day should be either moderate- or vigorous- intensity aerobic physical activity, and should include vigorous-intensity physical activity at least 3 days a week.

- **Muscle-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include muscle-strengthening physical activity on at least 3 days of the week.

- **Bone-strengthening:** As part of their 60 or more minutes of daily physical activity, children and adolescents should include bone-strengthening physical activity on at least 3 days of the week.

It is important to encourage young people to participate in physical activities that are appropriate for their age, that are enjoyable, and that offer variety (CDC, 2008).

Nutrition and Wellbeing

Food is a basic and foundational part of our lives. But sometimes we act as if the link between a balanced diet and our health does not exist. Rather, we should look at it as a strong one. Study after study has shown that people who eat whole foods rich in nutrients enjoy their lives more, live longer, and are at a reduced risk of disease. By eating the right foods, reducing our intake of fat and sugar, and exercising portion control, we can also maintain a healthy body weight and avoid chronic diseases such as diabetes and heart disease. Here are some of the researched relationships between what we eat and our health:

Fruits and vegetables

Eating at least 400 g, or 5 portions, of fruits and vegetables per day reduces the risk of Non Communicable Diseases (WHO, 2003), and helps ensure an adequate daily intake of dietary fibre. As such, always include vegetables in your meals; eat fresh washed fruits and raw vegetables as snacks and always eat different varieties of fruits and vegetables. Examples of such include; apple, oranges, grape fruits, limes, bananas, mangoes, pears etc.

Fats

Reducing the amount of total fat intake to less than 30% of total energy intake is important most especially for an adult because it helps prevent unhealthy weight gain in the adult population (Hooper et al, 2012; WHO, 2003; FOA, 2010). Also, the risk of developing Non communicable diseases is lowered by reducing saturated fats to less than 10% of total energy intake, and trans fats to less than 1% of total energy intake, and replacing both with unsaturated fats (WHO, 2003; FOA, 2010). Fat intake can be reduced by: changing how you cook such as removing the fatty part of meat, using of vegetable oil (not animal oil) and palm oil, and boil, steam or bake rather than fry. Also, avoid processed foods containing Tran's fats; and limiting the consumption of foods containing high amounts of saturated fats (e.g. cheese, ice cream, fatty meat) (WHO, 2003; FOA, 2010).

Salt (sodium)

Most people consume too much sodium through salt (corresponding to an average of 9–12 g of salt per day) and not enough potassium. High salt consumption and insufficient potassium intake (less than 3.5 g) contribute to high blood pressure, which in turn increases the risk of heart disease and stroke (WHO, 2010). 1.7 million Deaths could be prevented each year if people's salt consumption were reduced to the recommended level of less than 5 g per day (Mozaffarian et al 2014). People are often unaware of the amount of salt they consume. In many countries, most salt comes from processed foods (e.g. ready meals; processed meats like bacon, ham and salami; cheese and salty snacks) or from food consumed frequently in large amounts (e.g. bread). Salt is also added to food during cooking (e.g. bouillon, stock cubes, soy sauce and fish sauce) or at the table (e.g. table salt) (Mozaffarian et al 2014). Potassium, which can mitigate the negative effects of elevated sodium consumption on blood pressure, can be increased with consumption of fresh fruits and vegetables. Salt consumption can be reduced by not adding salt, soy sauce or fish sauce during the preparation of food, not having salt on the table, limiting the consumption of salty snacks and choosing products with lower sodium content (Mozaffarian et al 2014).

Sugars

The intake of free sugars should be reduced throughout the life course (WHO, 2015). Evidence indicates that in both adults and children, the intake of free sugars should be reduced to less than 10% of total energy intake (WHO, 2003; WHO, 2015), and that a reduction to less than 5% of total energy intake provides additional health benefits (WHO, 2015). Free sugars are all sugars added to foods or drinks by the manufacturer, cook or consumer, as well as sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. Consuming free sugars increases the risk of dental caries (tooth decay) (WHO, 2015). Excess calories from foods and drinks high in free sugars also contribute to unhealthy weight gain, which can lead to overweight and obesity. Sugars intake can be reduced by limiting the consumption of foods and drinks containing high amounts of sugars (e.g. sugar-sweetened beverages, sugary snacks and candies); and eating fresh fruits and raw vegetables as snacks instead of sugary snacks (WHO, 2015).

Specification of Healthy Nutrition

Consuming a healthy diet throughout the life course helps prevent malnutrition in all its forms as well as a range of non communicable diseases and conditions (WHO, 2015). But the increased production of processed food, rapid urbanization and changing lifestyles have led to a shift in dietary patterns. People are now consuming more foods high in energy, fats, free sugars or salt/sodium, and many do not eat enough fruit, vegetables and dietary fibre such as whole grains

For adults, a healthy diet contains: Fruits, vegetables, legumes (e.g. lentils, beans), nuts and whole grains (e.g. unprocessed maize, millet, oats, wheat, brown rice). At least 400 g (5 portions) of fruits and vegetables a day (WHO, 2003). Potatoes, sweet potatoes, cassava and other starchy roots are not classified as fruits or vegetables. Less than 10% of total energy intake from free sugars (WHO, 2003; WHO, 2015) which is equivalent to 50 g (or around 12 level teaspoons) for a person of healthy body weight consuming approximately 2000 calories per day, but ideally less than 5% of total energy intake for additional health benefits (WHO, 2015). Most free sugars are added to foods or drinks by the manufacturer, cook or consumer, and can also be found in sugars naturally present in honey, syrups, fruit juices and fruit juice concentrates. Less than 30% of total energy intake from fats (Hooper et al, 2012). Unsaturated fats (e.g. found in fish, avocado, nuts, sunflower, canola and olive oils) are preferable to saturated fats (e.g. found in fatty meat, butter, palm and coconut oil, cream, cheese, ghee and lard) (FAO, 2010). Industrial trans fats (found in processed food, fast food, snack food, fried food, frozen pizza, pies, cookies, margarines and spreads) are not part of a healthy diet. Less than 5 g of salt (equivalent to approximately 1 teaspoon) per day (WHO, 2012) and use iodized salt.

For infants and young children, in the first 2 years of a child's life, optimal nutrition fosters healthy growth and improves cognitive development (WHO, 2012).It also reduces the risk of becoming overweight or obese and developing NCDs later in life. Advice on a healthy diet for infants and children is similar to that for adults, but the following elements are also important; Infants should be breastfed exclusively during the first 6 months of life, Infants should be breastfed continuously until 2 years of age and beyond, From 6 months of age, breast milk should be complemented with a variety of adequate, safe and nutrient dense complementary foods. Salt and sugars should not be added to complementary foods at all (WHO, 2012).

Physical activity, Nutrition and Wellbeing

Eating a balanced diet and being physically active are two of the most important things you can do to be and stay healthy at any age. A balanced diet includes eating the right amount of calories and nutrients to maintain a healthy weight. Physical activity is any form of movement that uses energy and People of all shapes and sizes and abilities can benefit from being physically active. Some physical activity is better than none and the more you do the more benefits you gain. Chief among the benefits of a healthful diet and physical activity is a reduction in the risk of obesity. Obesity is a major risk factor for several of today's most serious health conditions and chronic diseases, including high blood pressure, high cholesterol, diabetes, heart disease and stroke, and osteoarthritis. Obesity also has been linked to many forms of cancer (U.S Department of Health and Human Services, 2008).
Eating smart and being active have similar effects on our health, these include:

. Reduce the risk of chronic diseases, such as diabetes, heart disease, stroke, high blood pressure, stroke, and some cancers and associated disabilities
. Prevent weight gain and/or promote weight loss
. Improve overall well-being
. Strengthen muscles, bones, and joints
. Being active can also improve your personal appearance, encourage fun with family and friends, maintain the ability to live independently, and enhance fitness for sports.

CONCLUSION

It was discovered and concluded after review that Good nutrition; an adequate, well balanced diet combined with regular physical activity; is a cornerstone of good health. Everyone can gain the health benefits of physical activity regardless of age, ethnicity, shape or size. Poor nutrition can lead to reduced immunity, increased susceptibility to diseases, impaired physical and mental development, and reduced productivity.

RECOMMENDATIONS

Based on this study, the following recommendations were made;

- All adults should avoid inactivity and engage in physical activities as sedentary life style is not good for the overall health
- Consuming healthy diet throughout the life course is important because it helps to prevent malnutrition in all its forms as well as a range of non communicable diseases and conditions

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Full Length Research

UNDERSTANDING THE PROCESS OF GERMAN LANGUAGE TEXT (An Analysis Protocol)

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One of the questions related to the efforts to find a way that is effective and efficient reading is "what happens in one's mind when attempting to understand a German language text". Data about the process understanding of the text obtained by using the technique of thinking aloud protocol (TAP) or thinking aloud. Results of the analysis showed that (1) in general, the process of understanding the information contained in text in two stages, namely understanding the title and body of the text, (2) activation of schemata is done in two ways: (a) provide a statement to yourself as a confirmation of the truth information from the text read, (b) give yourself questions for consideration of the correctness of the information he speaks. Distribution schemata activation occurs not only globally at the level of the text but also during continuous reading, both at the level of words and sentences, (3) the prediction made by the schemata guide both globally and focal.

Key Words: The process of understanding, reading, analysis protocol

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INTRODUCTION

Reading is one way of acquiring information in an effort to expand knowledge, understanding concepts, self-development as part of the improvement of human resources. For students, the mastery of a foreign language text reading skills is a necessity for many references and printed course materials in foreign languages, especially English.

In higher education, especially education in the Deutsch Education Study efforts to provide students with reading skills German subtitles continuously improved through a program of lectures *Arbeit am Text* The courses and reading skills. Nevertheless, the ability to understand the German language text remains inadequate. The statement recognized by Trijanto (2002) that the German language students have not been able to understand the German text at a rate that should be mastered. The above statement indicates a disparity between educational objectives and the results achieved. The gap raises the question of why students still have difficulty in understanding the content of the text, though have been trained and equipped with a variety of text comprehension strategies with adequate time allocation. Some of the factors that can be considered as a cause of optimal capability of the students in understanding the foreign language text, among others, the factors of the student; how the thought process of students in reading? Do students have adequate knowledge of how to read well? Do students have good reading habits?

This study is an attempt to answer the question " How is the process of thinking of students when trying to understand the text content in German?" This study focused on the processes occurring in the mind or thoughts of students of German at the time of reading and trying to understand the contents of the text, which includes subfocus; (1) the process of thinking while reading in general, (2) activation of schemata, (3) the establishment of a prediction or hypothesis of the content of the text.

LITERATURE REVIEW

Reading Definition

Smith (1982) argues that reading is an interaction between reader and text in combining visual information and non-visual information. Visual information is information that is printed in the form of text and nonvisual information is schemata that exist in the memory of every person. Eskey (1988) argues that reading is a cognitive process, because that is important in reading is knowledge stored in one's memory. Read related to the schemata or knowledge and experience stored in the memory of each person. Nuttal (1996) defines the term scheme (Pl. Schemata) as a mental structure that is composed of various components of knowledge and very helpful in the process of understanding the text, while Eskey call schemata as cognitive structure (cognitive structure). One example that illustrates the importance of schemata in reading is a small child who is hard to understand a text that is specifically designed for adults. Brown (1994) argues that reading is not just a visual event, but rather more on information obtained through reading is contributed by the readers of the information in the text itself. So the ability of reading depends on efficient interaction between linguistic ability and insight and experience possessed. Meanwhile Laveau (1985) points out two main requirements that need to be met by a reader to gain an understanding of the text content are as follows (1) the reader should have knowledge of the linguistic system that includes rules of language, vocabulary, text structure, (2) reader must have background knowledge regarding the text in general which can help the reader to process new information which contained in the text.

Eskey (1988), trying to integrate the concept of top down and bottom up with the view that reading is a cognitive process, that is important in understanding what the readings are stored in the cognitive structure, which in this case is the schemata held by the reader. The same concept expressed by Nuttal (1996) that the interactive reading an interaction between the top down and bottom up. Grellet (1981) argues that reading is a skill that is active since the beginning reader has to try to guess, predict, reflect, when learning the text structure (which including title, figure, text length), make hypothesis regarding the content and the function of the text, anticipating keywords which can be used as a mean to confirm the hypothesis, reading the text as a whole while adjusting to the content, confirming and revised hypothesis which was established before.

The theories above confirms that reading is a process of linguistic blend of knowledge, experience and understanding or insight on the theme of reading to achieve an understanding of the content of the text. In the process required the active participation of the reader in building mental representation connecting old information contained in the memory with new information contained in the text. The shape of the active participation of the reader's mind begin to predict the contents of the text, asking, recognizing and reviewing the content of the text.

Definition schemata

Nuttel (1996) argues that the terms of the schemes (Pl. Schemata) is a mental structure that is composed of various components and very helpful in the process of understanding the content of a text. Further stated that the schemata include general social schemata, the schemata person, personal schemata and schemata as knowledge related to a specific event (event schemata). Eskey (1988) calls the schemata as cognitive structure (cognitive structure) consisting of linguistic knowledge (knowledge of form) and knowledge or insight about the theme of the text (knowledge of substance). The schemata is divided into two parts, namely the formal schemata (formal schemata) that knowledge of text structures and schemata of content (content schemata) that knowledge about the topic or theme of the text. Based on the understanding and sharing of schemata can be said that schemata play a very important role in understanding the text. The text that is not in accordance with the reader's schemara will reduce the interest and motivation to read because readers have difficulty in obtaining a general overview of the contents of the text, as in the case raised by Robeck et al (1974) that child is always fail to understand the content of the text will assume reading as a punishment so that he always left the classroom and went into hiding during school hours to read. If how to read and understand the text by making use of schemata and used regularly practiced from an early age, it will form a productive and efficient reading habit.

Thinking Definition

Malim (1994) suggests that thinking is a process of manipulating information either obtained through sensing and information obtained from past experiences stored in memory in response to the situation at hand. Vinacke (1974) argued that in view of psychology, thought is regarded as the process of organizing and putting back things that are learned in the past into a situation or condition that is being faced. The two concepts are implicitly shows that things are learned in the past is embodied in the form of information stored in the memory of every person. Thus there is an inevitable thing in thinking is the information stored in the memory of every person. Rachmat (2005) suggests that thinking is one step in the process of information processing that process and manipulate information that includes sensation, perception, memory to meet the needs or responding. Meyer in Suharnan (2005) states that the thinking process normally includes three components as follows; first, thinking is a cognitive activity that occurs in the mental is not visible, but can be inferred based on observed behaviour, such as a chess player who shows his thinking process by movements or steps shown on the chessboard. Second, thinking is a process that involves some manipulation of knowledge in cognitive systems. Knowledge that was once owned and stored in the memory together with the information at hand so as to change the knowledge of someone about the situation at hand. Thirdly, the activity of thinking is directed to solving the problem. Albrecht et al (2005) argues that thinking is an information management process that is guided by the brain. Biological brain, neuron and the contents of the mind is the brain. The brain has two sides, namely (a) the left / left hemisphere that plays a role in the processing of words, logic, sort order, numbers, mathematics called academic learning, (b) the right side / right hemisphere dealing with rhythm, music, image and imagination are referred to as academic creativity, the two sides are connected by the corpus collosum.

The above description shows that thinking involves the brain that consists of the parts and functions of each bridged by neural networks. In this case thinking requires biological equipment - neuron, and on the other hand think need information as objects that are processed in the brain delivered by nerves. The information is processed in the brain and then stored in the memory as new knowledge or information or also as confirmation of information or knowledge that already exists, even determine how to act and behave

Thus it can be argued that thinking is a process that combines aspects of information processing-neuron biological and cognitive aspects to gain new knowledge, confirms the existing knowledge, or determine how to act or behave as well as to solve a problem.

Process Thinking in Reading

A common question raised with respect to the focus of this research is what is in the student's mind, while reading and trying to understand the German text. To answer these questions one must think. De Bono (1993) suggests that there are only two types of behaviour to think that the desire to think and must think. By analysing and understanding the nature of reading and thinking as suggested above, it is clear that reading is a thinking process that occurs in the mind of every reader when trying to understand the information contained in the text. This statement is in line with the statement of Franz (2005) that reading is a thinking process. The object of the thought process is information contained in words, sentences, paragraphs or text.

Protocol Analysis

Based on Nunan (1997) and Pearson (1984) that thinking aloud is a technique of data collection by individual is asked to verbalize his thought processes at the time of reading or while completing a task or solve a problem. Kibby (1997) called thinking aloud (Thinking aloud) as verbal statements (verbal report) or verbal protocol (verbal protocol) protocol in this case refers to verbalize thoughts verbalized or phrase that can be obtained with a recording technique. The same opinion was expressed by Nunan (1997), that the protocol is a written description of the whole data recording of a subject. The statements above show that Thinking aloud is an efficient way to obtain qualitative data, and is a good way to find out what someone thought at the time was carrying out his duties. Kuncan et al (1997) argues that (1) thinking aloud is a technique used to understand the behaviour of a person at the time of reading, (2) thinking aloud is a way the teacher to design a behavioural model reading for students in the teaching of reading, (3) verbalization behaviour of students in reading is a way to develop skills or improve the previous strategy as a reflection of the meaning of the text. Furthermore Kuncan et al (1997) emphasize that there are some things that need to be considered in the implementation of this method: (1) determine the objectives to be achieved, (2) need to be shown to the respondents about the purpose of implementation of activities, (3) the provision of guidelines, (4) do not disturb the respondents during the verbalization process is underway, (5) all recorded activities that facilitate the description and analysis. On these responses, the followers of cognitive psychology, among others Newel, Simon and Ericsson provide rebuttal by

arguing as quoted Malim (1994) that computers can not represent the human brain, computers are not able to think creatively, cannot even represent human emotion, such as crying, angry etc., and suggested that should be done immediately verbalize thoughts / simultaneously during the process of thinking takes place through thinking aloud.

METHODOLOGY

This research is based on the paradigm of qualitative content analysis techniques (*content analysis*). In the execution of researchers analysed the data obtained were then grouped based on common semantic relation to the categories defined by reference to the research questions. The categories can be revised and verified simultaneously with the process of analysis. Meanwhile, the research steps undertaken in this study include: a theoretical study that includes all the variables related to the focus of research, analysis protocol thinking and discussion, conclusion and delivery implications and suggestions.

Data source

The data source of this research are students of German language Jakarta State University who are in fifth semester of the course Arbeit am Text.

Research Instruments

The instrument of this study is the researchers themselves by using tools such as text and recording devices have been available in a language laboratory Faculty of Language and Art, State University of Jakarta.

Data Collection and Analysis Procedures

The procedure of collecting data in this study is adapted from Kuncan L, and Beck I:

. Determining the purpose of collecting data.
. Text selection.
. Giving an explanation about the purpose of the data collection activities.
. Give clues about the implementation of the tasks / activities.
. Implementation of activities / processes verbalization and recording
. Data recording is transcribed and analysed.

Data were analysed with measures of qualitative data analysis as follows: (1) data reduction, (2) presentation / display of data, (3) conclusion / verification. Operationally steps - the steps stated as follows; (A) recording data typed, (b) the data of each respondent combined based on text passages where the process of thinking presented in tabular form, (c) the combined data based on parts of the text is then displayed or distributed and grouped again by similarity semantic relationships, (e) the grouping categorized according to their semantic similarities, (f) categories of data are summarized thoroughly then presented in the form of flowcharts to facilitate the understanding of the overall process, (g) the withdrawal of the conclusions of analysis.

Eligibility Examination Data

Data validation was performed to obtain the degree of confidence in research findings in a way; First, the accuracy of the researcher in the selection of customized text with difficulty levels are determined based on the description of the course Arbeit am Text and consistency of researchers in interpreting the research data through a review of repeated violations of the placement of data and categories, secondly, a study of references relating to research focus, third , perform triangulation which includes triangulation of internal resources by comparing the study with the results of interviews, triangulation investigators by way of discussions with the promoter as experts, as well as colleagues' with respect to the data and research findings to get a deal intersubjective, so that what is inferred verified.

FINDING AND DISCUSSION

Text Comprehension Thinking Process in General

Overall understanding of the text is done through two phases, namely understanding torso title and text. First, the understanding of the text title is done by translating word for word, translating the title or subtitle alone, translating international terms and associate them with the contents owned schemata. Based on the understanding of the title and the schemata defined predictions or assumptions of the contents of the text outline. The second stage is the understanding of the body of the text is done in various ways (1) to translate word by word and sentence then summarize or encapsulate, (2) read the text or paragraph as a whole and then summarize it, (3) pronounce, or translate a specific word just then ignore them I stop reading. So overall tendency to think in reading the text focused on the meaning of every word so that the core text is not understood. Both the common steps as illustrated in the following diagram shows the process of understanding and comprehension title torso separate text, because the default prediction at this stage of understanding the title is not used during the process of understanding the body of the text takes place.

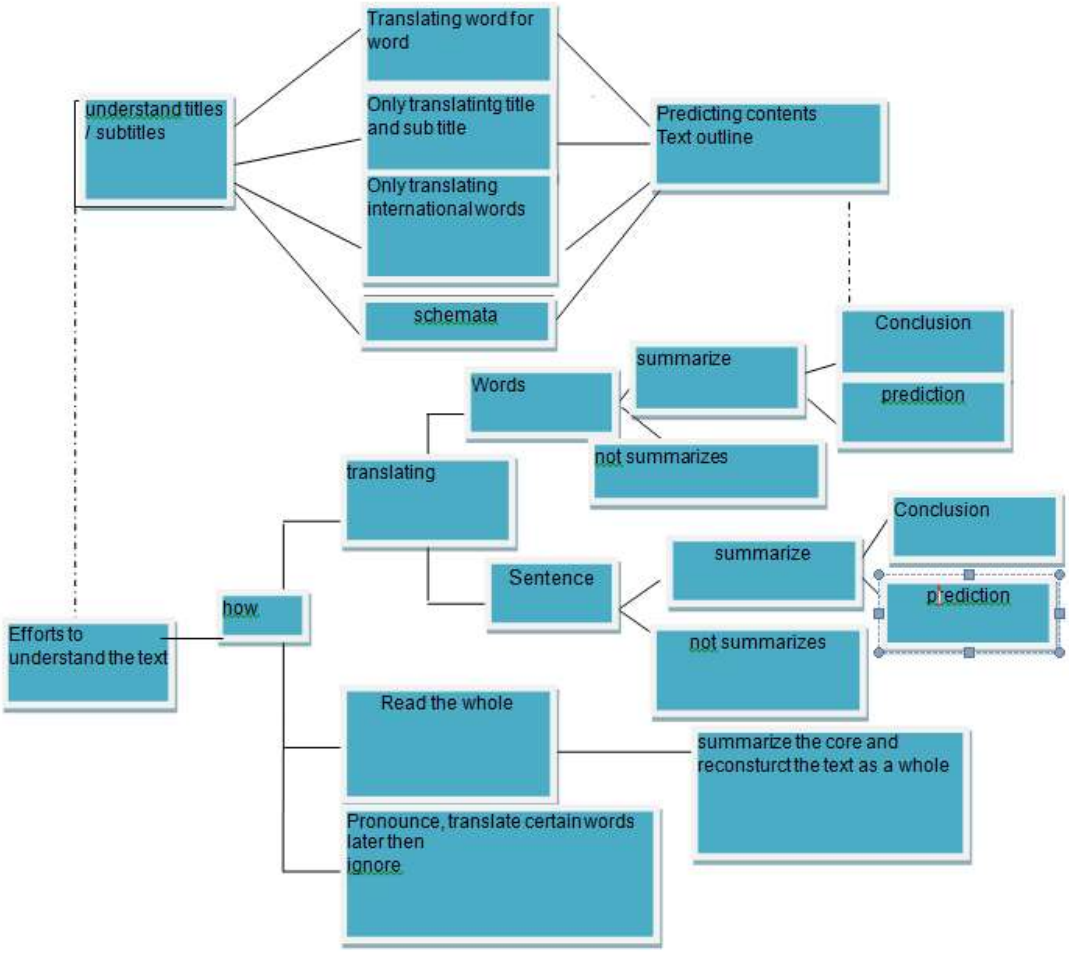

Figure 1. The Thinking Patterns in Text Comprehension

How to Predict

Prediction is done globally at the level of predictive text and focal at the level of words. Global prediction is performed only at the beginning of the process during the reading of the text title with a guide schemata. While the focal predictions occur during continuous reading. Predictions at the level of words or focal predictions made by predicting directly based on knowledge of the primary meaning of the word, predicting based on similarity of sound of the word, the word prediction based on pattern formation, predicting the core meaning of a sentence or a paragraph based on the meaning of words and terms internationally. In other words, predictive meaning of a sentence or a paragraph preceded by translating words and terms internationally. Nevertheless, global predictions that should be tested and adapted to the content of the text and schemata ignored during reading text torso underway, as respondents were more focused on understanding every word. If global and focal predictions are revised and reinforced the truth, then that information cannot be regarded as definitive information or knowledge. Pattern and level of prediction can be simplified in the following flow chart in figure 2.

Patterns and Predictions level

Schemata Activation

Activation of the schemata is done by giving the statement and question yourself. Statement given to reinforce the understanding of specific words or text content, while giving yourself questions about the veracity of the information read is done especially if the information is still in doubt. In other words, these findings

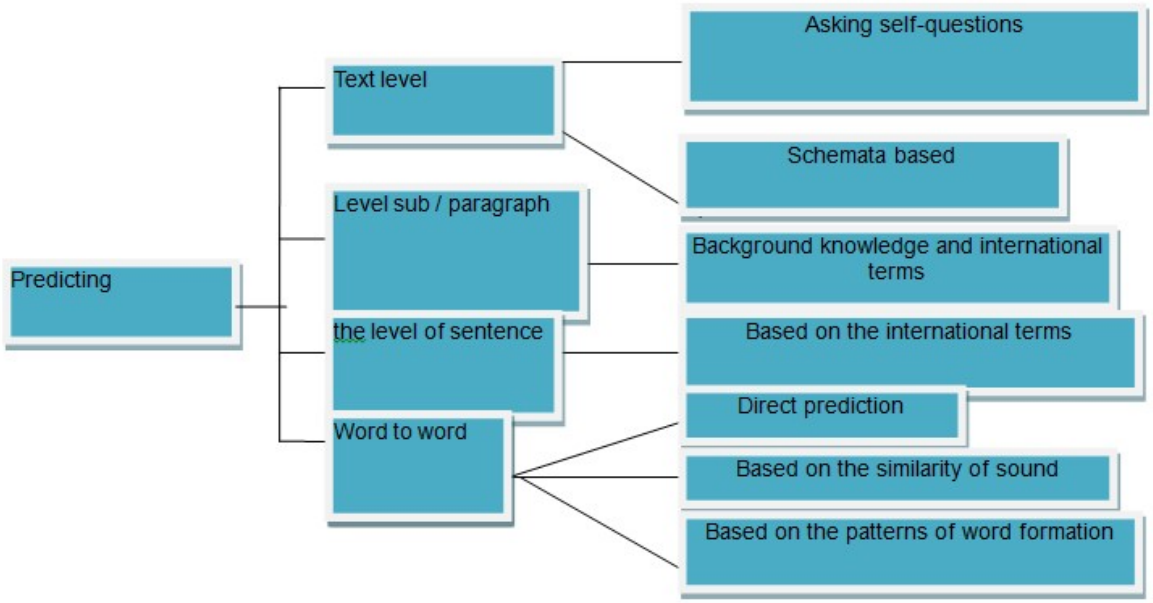

Figure 2. Patterns and Predictions level

show that the first two functions schemata, the schemata used as a confirmation of understanding of the text, sentences or words because compatibility between the text content with schemata owned, second, schemata are used as a guide in setting the prediction characterized by question- question.

CONCLUSION AND SUGGESTION

(1) In general, the process of thinking while reading centered on understanding the information contained in text in two stages, namely understanding the title and body of the text, (2) activation of schemata is done in two ways: (a) provide a statement to yourself as an affirmation the accuracy of information from the text read, (b) give yourself questions for consideration of the correctness of the information he speaks. Distribution schemata activation occurs not only globally at the level of the text but also the whole process of reading takes place, (3) the prediction made by the schemata guide both globally and focal. (4) Understanding of the word, sentence carried out by (a) translating word for word including international terms in each sentence (sub-paragraph) then summarizes the purpose of the word or phrase. And translate without summarizes (b) sub-paragraphs read as a whole and then summarize it in (c) or recite and translate certain words and then ignored. In practice, a summary of which was made is two summaries in the form of conclusions the purpose of text and a summary of which is still in the form of prediction is tentative, (5) the introduction of sentence structure as one of the devices, to understand the text has not been used, (6) other factors that influence mind in understanding the text is fatigue, boredom and frustration as a result of a focused understanding of the word for word. The tendency to understand verbatim the respondents quite understand the ways a good read. Nevertheless the knowledge on how to read the good as presented by the respondents are not fully implemented in the reading.

Based on these results it is suggested; (1) conducted researches further about the process of thinking in reading the other institutions so they can get a broader picture of the thought process at the time of reading, (2) research like this needs to be developed further by focusing the thought process at the time of reading by the goal, for example read to obtain global information, read selectively or read detailed, (3) the organizer of learning to read should enpomwer training activities to understand the text and text comprehension test, (4) training activities to understand the foreign language text should be done early at the junior level.

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Full Length Research

Elucidation of the importance of the English Language in Post-Independence Nigeria

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The paper examines the use of the English language in Post-Independence Nigeria and further illuminates the importance of the English language in various sectors and government establishments. Finally, the English language has been the major unifying form of communication among the inhabitants of multi-ethnic Nigeria and has also significantly contributed to an increase in employment in the country.

Keywords: English Language, Nigeria, Unity, Communication

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INTRODUCTION

The English Languagehas contributed to bridging communication gaps and unifying Nigeria.Almost all the important sectors of the Nigerian society make use of the English language and they include schools, offices, various arms of government and other institutions. Nigeria should strive to continue to invest massively in English language as a result of numerous employment opportunities. English is indeed an important international language and it is spoken by about 1.75 billion people. It is indeed one of the languages of science, diplomacy and business. In addition, the activities of Christian missionaries especially from England though their conversion of Africans in Nigeria helped in the spread of the English language rapidly. Nnamdi-Eruchalu (2012) did mention in an earlier study that “The (British) merchants taught the middle men at the coastlines the English language so that they could keep simple records while the missionaries introduced the formal school system when they discovered their converts would be better if they can read and write” (p. 2). Although we have different varieties of English language spoken presently in Nigeria, English is important in trade, academia and dialogue. An increasing number of multinational companies are looking forward to employing qualified and capable graduates who can communicate effectively in the English language. Those in the academia are not left behind as a result of the fact that many reputable academic journals are published in English.

Moreover, English language is an important part of our communication with other countries of the world. People tend to network better in our society when they have a good command of the English language. There is also an increase in demand for teachers who are qualified to teach the English language. In our society, for one to have a successful professional career, English is vital as it plays an important role during communication which could be written or verbal. English has a large vibrant economic importance for the Nigerian society as trade and exports across the various continents are most times achieved through the use of the English language. The importance of the English language in

the country especially in the 21st century cannot be over emphasized.

English Language and the Nigerian Society

English language is one of the predominant languages spoken by Nigerians: the various kinds of English spoken by Nigerians include Pidgin, Broken and Standard English. Furthermore, some Nigerians are bi-lingual while others are multi-lingual meaning they can speak more than two languages including English which is the official or national language spoken in Nigeria. The school and our home play an important role in our ability to learn how to speak and write the English Language effectively. Although some factors militates against children learning English language effectively. Obayan, et al (1991) discovered that "the first problem which faces the Nigerian child learning English for the first time at the primary school level is how to adjust the mouth and ears to the new language which is very different from most Nigerian languages"

Children whose parents are multilingual teach them how to communicate in English Language. Most schools in Nigeria make use of English as a medium of instruction/teaching excluding Islamic schools which make use of Arabic as the medium of communication and teaching. In an earlier study by Lado, (1964) he states that; "Language is intimately tied to man's feelings and activity, it is bound up with nationality, religion, and the feelings of self. It is used for work, worship and play by everyone." In Nigeria, we have come to the realization that many parents communicate with their children using English and sometimes their various local languages.

English is a second and national language spoken in Nigeria. Irrespective of the fact that English language has its roots in British colonial rule in Nigeria, it is indeed now a language that distinguishes a person's social status and the class he/she belongs in the society. In an earlier study by Christopher (n.d), she states that:

> Those who speak English are perceived as learned and vice versa; Nigerians want to be seen as learned or urbane. More important, attaining proficiency in the English language is imperative for those who want to advance educationally, since they must pass the English subject, and use it as the medium for learning other subjects. (p. 87-88).

It is important to note that there is an increase in demand for qualified people seeking various job opportunities in our society. The symbolic implication is that prospective employers of labour are looking for people who can communicate effectively using the English language which is the official language in Nigeria.

A person's ability to speak the English language fluently especially in our society places him/her in a better position to meet new people, get a job, travel to English speaking countries and may become an academic. Like we noted earlier that there are various kinds of English spoken in our society; they are all used as a means of communication. For instance, if you travel to a place like Benin City, you will notice that majority of the inhabitants of the city speak English but not the Standard English.They speak Pidgin English (creole) which has become the major language used in communication, trade and other social interactions in the city. Furthermore, most Nigerians know how to communicate in various kinds of English, although Pidgin English is generally spoken by majority of Nigerian which is easy to comprehend and less complicated likeStandard English.

Over the years, we have come to observe that many young Nigerians prefer to communicate inEnglish; this could be as a result of their view that English language is sophisticated and a language for the elite. The English language is indeed instrumental to the development of Nigeria. Onuigbo and Eyisi (2009) postulates that "the English language will continue to be the centre of Nigerian development because there is no immediate alternative among the various indigenous languages"(p.49). In the university environment such as the University of Calabar, there is a high demand in the usage of the English language as a result of the fact that it is the language of instruction.English is used for official academic interactions and other various activities on campus such as religious and social activities.

As a result of the bilingual and multilingual nature of the Nigerian society, there is a tendency for people to code-mix and code-switch form English to their mother tongue.For instance semi-literate people such as the market women and traders in our society, since they may not be able to communicate effectively speaking Standard English, they seem to prefer making use of Pidgin English as a form of communication in order to sell their products and services.

In addition, people are motivated to learning English language as a result of the fact that they might have better opportunities to be gainfully employed by a prospective employer or travel abroad to teach English since there is a high demand of qualified teachers (English language) in some Asian countries. Prospective university students' are expected to have at list a credit pass in the English language in the Senior School Certificate Examination (SSCE) in order for them to be admitted into the various universities and other institutions in Nigeria. Adedeji, (1984) postulates that: "A science student needs language for acquiring and communicating knowledge and skills in science and technology. He needs language to help him define concepts and describe substances, objects, locations and processes, report facts, draw inferences, make conclusions, classify items and make generalizations" The symbolic implication of failing to pass

this subject is that prospective students will not be able to gain admission into the universities of their choice. Christopher (n.d) therefore stresses the importance of English language once again when she notes that:

Thus, proficiency in the English language today in Nigeria is increasingly becoming the privilege of the minorities whose parents are educated and can afford the cost of private education for their children. (p. 90)

Through the effective use of multimedia aids such as television, computers and smart phones, the learning of English language has increased tremendously. Indeed, there are more people that are able to communicate (written and oral) in the English language now than in the past three decades in Nigeria.

English Language and Government Establishments

Nigeria is the most populated black country in the world and as such an important country in Africa and the world at large. After she gained her independence in October 1st 1960, she had encountered pyramids of economic and political problems. However, the English language remains the language used in various government establishments in Nigeria. For instances, the activities of the three arms of government which include, legislative, executive and the judiciary which is often referred to as the last hope of the common man are conducted using the English language. It would have been difficult to conduct the activities of various government establishments/institutions without the use of English since Nigeria is a multiethnic country.

Olusoji (2012) is of the view that:

> With English language, the number of problems usually posed by lack of a common language in heterogeneous communities such as Nigeria became suppressed and the language (English) has remained one of the strongest instruments of unity and development for the people of the country. (p. 134)

Theprominence of the English language especially in the administration of various government establishments cannot be over emphasized. As a result of the multiplicity of the numerous languages in our society and the difficulty in adopting an ethnic language as the national language of Nigeria, English therefore becomes the language adopted to be used in all government establishments. The activities of the senate are conducted using the English language since most of the members of the National Assembly come from different geo-political regions of Nigeria. It will be difficult to conduct the activities of the senate using a local language as it might bring about division and lack of trust especially for members who do not understand the language. Activities of other government establishments such as the Nigeria police, army, customs, immigration and other paramilitary groups are in English.

The activities of government establishments such as committees that investigate the misappropriation of government funds by past administrations were conducted in English. Most reports presented are usually in English languages. In the health care sector which is another important government establishment, Federal Teaching Hospitals and other medical centers in the country ensure that they make use of the English language.It is also important to note that all government establishments across the various geo-political regions of Nigeria conduct their activities in English. Vital documents are written in English for clarity purpose, since there are about hundred and fifty languages or more spoken by the various ethnic groups in Nigeria. In order to avoid confusion, the activities of numerous government establishments are document using the English language.

From the foregoing, we have been able to illustrate the importance of the use of the English language in the various government establishments in the Federal Republic of Nigeria.

English language, National Unity and Development

The English language has contributed significantly in uniting citizens of Africa's most populated country. It is pivotal to state that Nigeria has an enormous population of millions of people from various ethnic backgrounds, the use of English as the national language of Nigeria is indeed a good development. The English language in Nigeria is now the language of commerce, education, politics and the various mass media outlet. This is largely as a result of 'British colonial conquest of Africa and Nigeria in particular. As a result of the above, it has brought about national unity and English called "Nigeria English". In an earlier study by Aremu (2014), he points that:

> The blending of the socio cultural ethos and norms of Nigerian multicultural and multilingual contexts with the standard British variety of English has led to a new tongue of the language called "Nigeria English" (p. 58)

As a result of the multi ethnic nature of the Nigeria state, Nigerians had to result to establishment of our own kind of English which has help in the fostering of unity and national development in the country. Furthermore, Ike (2001, p. 013) asserts that the English language is "a unifying force among Nigeria's over 500 groups each of which speaks and understands no other ethnic language than theirs".

In the information technology sector in Nigeria, the use of English has contributed to information dissemination especially on social medial platforms across the country. Although the English spoken in Nigeria today is hybridize in the sense that there is a fusion of western and Nigeria concepts, views, ideologies in the spoken and written English adopted by a large percentage of Nigerians today. Aremu (2014) further states that English language is employed "through Facebook, LinkedIn, 2go and other digital tools in engaging in virtual interactive discourse" (p. 59).

The various ethnic groups living in Nigeria may take pride in using their various languages as the national language in Nigeria but for the fact that other ethnic nationalities may tend to disagree led to the adoption of the English language as a national language in the country. Obiegbu (2015)states that:

> The use of English as the official language in Nigeria defuses ethnic conflicts and yet questions the authenticity and identities of the users. This has always resulted in arguments about the choice of indigenous languages for official and national purposes because the use of English as our official language strikes at the root of national pride since English is a colonial language (p. 83).

The relative unity in the Nigeria National Assembly and State House of Assembly may be linked to the use of the English language in the conduct of the affairs of the National Assembly. This might be as a result of the fact that no ethnic group will be happy if another ethnic group language is adopted in the daily affairs of the country. Since the various languages spoken in Nigeria have geographical limitations/boundaries, it will be unwise to make use of a local language in order to avoid disunity across other various ethnic groups in the country.

In addition, Obiegbu (2015) notes that:

> The government takes account of sustainable development as a part of how it develops its policies, how it runs its buildings and how it buys it goods and services. All departments are responsible for making sure that their own policies and activities contribute to sustainable development. The English language forms a key factor to sustainable development in Nigeria. (p. 83-84).

Since English language is the medium of education in our schools, it is important to state that without proper educated people who can communicate effectively using the English language, it will be impossible for Nigeria to develop rapidly. The English language is the language used by researchers in Nigerian Universities. International business transaction is largely done through the use of the English language especially is a large scale. English language be it Standard, Pidgin or Broken English is understood by millions of Nigerians living in the country and aboard. To bring about national unity and development, the English language is the language used in the writing of the countries National Anthem and other monuments in the country.

CONCLUSION

We have been able to illustrate the importance of the English language in Nigeria and how it has been able to bridge various communication gaps in post-independence Nigeria. The language has helped in the unity of Nigeria through various government establishments use of the language for written and oral communication. Since it is also a medium of education in our various institutions, it has contributed to the production of effective and efficient graduates who are qualified to contribute to the growth and development of Nigeria. Finally, the English language has contributed to information dissemination and effective communication among the various ethnic groups in Nigeria.

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Full Length Research

The effect of Involvement with Job Crafting in Perceived Self-efficacy in Career

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The aim of the study was to investigate whether the Cypriot employees engage in proactive behaviors that help them develop high beliefs of self-efficacy, enjoy high levels of prosperity and performance, changing their attitude towards their work and personal life in general. More specifically, it was investigated whether Job Crafting is helping the Cypriot employees to develop self-efficacy in order to cope with various issues related to their career, and to empower their ability to organize their cognitive, relational and behavioral skills in a single path of action to achieve the targets of their career. The variables used were the three types of Job Crafting (tasks, cognitive and relational changes) and the four factors of Perceived Self-efficacy in Career (career management, career skills, flexibility and creativity at work). The sample consisted of 227 Cypriot employees of the public and private sectors, residents of all provinces of Cyprus, over the age of 25, who electronically completed the Job Crafting Questionnaire (JCQ) (Slemp&Vella-Brodrick, 2013), translated in Greek, the scale of Perceived Self-efficacy in Career (Sidiropoulou-Dimakakou, Mylonas&Argyropoulou, 2015) and their demographic elements. The results of the survey are optimistic, since they have shown that Cypriot workers are engaged in proactive behaviors that help them take an active role in their jobs and gain satisfaction and personal meaning. Of particular interest are the findings that Freelancers and Private Employees are more self-effective and are more concerned with modifying their jobs compared to civil servants, as well as, that employees in managerial positions are more involved with Job Crafting in relation to employees in executive jobs. There was also, a connection between the factors of the two scales.

Key words: Career Management; Career Planning; Career Skills; Job Crafting; Self-efficacy

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INTRODUCTION

The modern world is characterized by intense complexity and constant change and this is particularly true for the job market. Under the new conditions caused by the economic crisis and social instability, the job market no longer offers stable paths on which workers can design their careers (Savickas, 2013). Each person, in order to interact effectively with others, needs to interpret himself and his actions in his or her own personal way and to identify the basic elements that give him direction in his life (Guichard et al., 2012). His work on these issues is an important developmental project. As a result career development becomes challenging and

needs careful life planning (Savickas et al., 2009). New career prospects require a variety of skills and demand engagement in new experiences, exploitation of work values, challenge management, in-house job satisfaction, intellectuality and workplace understanding.Perceived Self-efficacy in Career and Job Crafting are modern career concepts that offer employees professional stability, a sense of identity, the opportunity to take an active roleand be successful in their current jobs.Considering the gap in research data in relation to the studied concepts, the economic and social crisis that Cyprus has experienced in recent years, the investigation of the effect of Job Crafting in Self-Efficiency Career Planning is of particular interest, as it provides useful and quantifiable information regarding the average working person in the country.

The survey explores (a) the extent to which Cypriot employees are engaged in proactive behaviors that help them cope with various issues related to their careers with competence and gain professional stability and success in their jobs; and (b) how positive is the correlation between work, relational and cognitive changes which are the components of Job Crafting, with the personal beliefs, attitudes and behaviors of employees, for the management, career skills, flexibility and creativity in the work are the four factors in the individual career planning.

Perceived Self-efficacy in Career

People with high confidence in their abilities tend to face difficult situations as challenges to overcome rather than as threats to be avoided (Bandura, 1997). Therefore, they try to exercise control over various complicated and hard tasks or situations (Kaliris&Sidiropoulou-Dimakakou, 2012). Perceived self-efficacy in career refers to the beliefs people form in terms of their ability to implement the appropriate actions required to effectively manage various career issues (Sidiropoulou-Dimakakou, Argyropoulou, Drosos, Kaliris, &Mikedaki, 2015). A relatively high degree of self-efficacy in career may strengthen the ability through which cognitive, social and behavioural skills are organized into a single course of action for the achievement of career objectives. Perceived self-efficacy in career highlights four areas of skills related to career exploration: Career Skills, Career Management, Flexibility at Work and Creativity at Work (Sidiropoulou-Dimakakou, Mylonas&Argyropoulou, 2015).

Thisnewvariable can be used in career consulting to understand the thinking process and actions of the individual when it comes to career planning, as well as, to creat to create new practices to help the individual develop his own perceived self-efficacy to face challenges related to career planning.(Argyropoulou, Tsikoura&Kaliris, 2017).

JOB CRAFTING

Job Crafting is described as the way employees work through changes in their work activities, their interactions, and the way they think about their work (themselves), to take an active role in their jobs (Tims, Bakker, &Derks, 2012). It is a form of proactive behavior that is guided by the workers themselves and while it encourages the individuals follow a practice in their work to better match their interests and skills so it gives them a personal sense of satisfaction, it is also beneficial for the employers as the employees are more productive. (Slemp&Vella-Brodrick, 2013).Job Crafting promises an effective intervention at the workplace because it requires workers to take a positive role in shaping their experience at work. It recognizes that employees are not formally able to redesign their professions, but there are and will be opportunities within almost every job to improve their experience and assign a personal meaning to their job and thus getting more satisfaction out of it. This applies to even restricted and routine professions. For instance, some employees might be ‘active crafters’, using a variety of job crafting behaviors, whereas others might be ‘passive crafters’, not using any job crafting behaviors to any marked extent or just focusing on reducing their job demands (Mauno, Kinnunen, Mäkikangas, &Feldt, 2010). Although the relevant literature on Job Crafting is recent, it is a growing field of research and it keeps researchers' interest undiminished as it is a continuous process that increases performance, reduces stress and increases worker welfare in all positions of work. Even if individuals do not have the flexibility to change their jobs, they can change the way they perceive it.

The Importance of Career Guidance and the development of Career Management Skills for the Employees

The constant changes that occur in the work market create the need for constant support of the individual in order to be able to navigate smoothly through all the stages of his professional development. Joining and remaining on the labor market is a result of a long-term evolutionary path that needs systematic preparation to successfully overcome obstacles and difficulties. The worker is required to take initiatives and show personal responsibility to direct his life and manage his/ her career effectively (Hall 2004. Sidiropoulou-Dimakakou, Argyropoulou,&Drosos, 2013). These conditions make lifelong learning and continuing training essential, for the development of certain skills.Lifelong career management skills refer to multifaceted skills and attitudes which encompass collection, analysis, composition and organization of information about self, education and professions (European Lifelong Guidance Policy Network, 2012).Career

management skills (CMS) are considered highly significant as they may support individuals in taking full advantage of educational and career opportunities, in coping with difficulties in the workplace, and in maintaining balance among various roles at work, education and family, throughout the life span.

In this context, the importance of the role of career counseling is evident. Through organized and systematic efforts itcan facilitate the professional development of the individual, his sense of identity and his professional activity (Hirschi, 2012). The counselors themselves ought to have follow up training often enough as well, in order to be able to respond effectively to the demands of modern society and help their clients successfully. Regarding the adult population from which our sample originates, high unemployment rates, migratory flows and various economic and social problems create vulnerable groups in the society and need to be treated professionally. Through the modern methods and techniques of self-efficacy in Job Crafting's career planning, the career counselor can help any person to claim a place in the job market, cultivate the necessary attitudes and behaviors to design and manage his career in the best way possible.In this way, the people themselves take the responsibility of their choices, and they seek to achieve their goals, experiencing a greater sense of meaning in their personal and professional lives (Hirschi,Jaensch&Herrmann, 2017).

Aim of the study and research questions

A cross-sectional survey design was employed in the research. A survey design is used byresearchers to numerically describe trends, attitudes or opinions of the population by only studying part of it. The purpose of this type of study is to generalize from a sample to a population so that inferences can be made about the characteristics, attitudesand/or behaviors of the population. This constitutes the major advantage of a survey research design (Creswel, 2009).
In particular, the following research questions were addressed:

1. What is the level of Job Crafting skills of Cypriot workers?
2. How do the Job Crafting skills of Cypriot workers differ under the influence of demographic variables? Is this effect specific to the independent variable under study?
3. What is the level of Perceived Self-efficacy in Career of Cypriot workers, as well as the level of the key factors that it consists of?
4. How isPerceived Self-efficacy in Career affectedby the influence of demographic variables? Is this effect specific to the independent variable under study?
5. Is there any correlation between Job Crafting andPerceived Self-efficacy in Career of Cypriot workers?

METHOD

Participants

The sample of the present survey consists of 227 Cypriot employees, of which 149 were women and 78 men. 120 Civil Servants,77 Private and 30 Freelance Professionals. 190 are dealing with office work and 37 with physical labour. 217 are employed in Specialized and 10 in Unskilled Work. 40in Management and 187 in Executive positions. The majority is university graduates, live in residential areas and have not changed profession. Different age range is observed. (104 are aged between 25-30 or over 51).

Measures

Crafting Questionnaire Scale. The adjusted Greek form (Shiaelis, 2018) of Job Crafting Questionnaire Scale (JCQ) (Slemp&Vella - Brodrick, 2013) was used to indicate the level of participants in Job Crafting dimensions. The Greek scale consists of 15 items, the same as the original one. Participants responded to each item employing a 6-point Likert-type scale (1 = Almost Never, at 6 = very often). Below, examples of items are given for each sub-scale: *Modification of tasks* (presents the person's ability to introduce or modify tasks in his / her work to better match his / her interests and skills): “Choose to take on additional tasks at work”, *modifying perceptions* (refers to changes made by the worker in the way he thinks about his work to give him satisfaction and personal meaning): “Think about the ways in which positively impacts your life”, *relationship modification* (refers to the person's ability to establish relationships with people in his workplace who have similar skills and interests): “Make friends with people at work who have similar skills or interests”. High reliability is reported in the current study (*modification of tasks:*0.78, *modifying perceptions:*0.91, *relationship modification:*0.80).

Perceived self-efficacy in career. Perceived Self-efficacy in Career Scale (PSECS; Sidiropoulou-Dimakakou et al., 2015) was used to explore career self-efficacy beliefs. The 21-item scale has reached adequate psychometric properties in studies with adults (N = 126) and high school students (N = 276). Four dimensions were supported by exploratory and confirmatory factor analyses (Sidiropoulou-Dimakakou et al., 2016): Career management represents the individual's ability to cope effectively with practical and emotional issues in career (e.g. "I believe I am able to achieve most of the career goals that I have set for myself despite the current social and economic difficulties"); Career skills relates to the utilization of organizational skills and performance when working under harsh conditions (e.g. "In general, I can think of alternative ways to better organize my work and become more efficient"); Flexibility at work refers to a person's ability to adapt to transitions and changes that may occur in the workplace (e.g. "Even when duties in my job change, I am able to perform efficiently"); Creativity at work represents active interest in career through creativity and ingenuity (e.g. "Thanks to my resourcefulness, I know how to deal with unexpected situations in my work"). Items are scored on a 5-point Likert-type scale (1 = no confidence at all, 5 = complete confidence). Alpha estimates in this sample were high for the sub-scales (.91, .92, .86, .88).

Demographics.A questionnaire was employed to gather data on gender, age, place of residence, educational level, employment and type of employment. In the category of professional characteristics, the professional situation of the respondents with clarifying questions, related to the sector, the status and the period of their professional activity, is determined.

Procedure

The data collection process was done by the completion of online forms. The data was collected between April and May 2018. The completion of the forms was on a voluntary basis and each individual interested in participating in the survey was presented with an introductory text which guided him through the process. The collection of the data was on a completely anonymous basis; there is no way of knowing the answers to the questions of any particular individual. The only prerequisites were that all participants were Cypriot workers and were 25 years of age or older. Invitations to complete the questionnaire were sent via e-mail and telephone messages. No award was given for participating in this research.

Data Analysis

SPSS V.25 was used to analyze data. Normality of data distribution was confirmed as the quotients of kurtosis and skewness with their corresponding standard errors were less than the number 3.29 (Roussos &Efstathiou, 2008). Descriptive statistics (mean and standard deviation) and internal consistency estimates (Cronbach's a) for the scores of the participants at the scales and the sub – scales of the survey were calculated. Comparisons of the scores of Perceived Self-efficacy in Career Scale and Job Crafting Questionnaire dimensions as to the demographic variables (gender, age, place of residence, educational level, employment and type of employment) were made employing one-way analysis of variance (ANOVA) and the t-criterion method. Correlations among the dimensions of Perceived Self-efficacy in Career Scale and Job Crafting Questionnaire, were computed using the Spearman r Correlation coefficient.

RESULTS

Psychometric Characteristics of the Scales

The internal consistency indices for the four factors separately of the Perceived Self-Efficacy in Career Scale (Sidiropoulou-Dimakakou, Mylonas, &Argyropoulou, 2015) and for the three dimensions of Job Crafting Questionnaire Scale (JCQ) (Slemp&Vella - Brodrick, 2013). Correspondingly were assessed. For the analyses the theoretical structure of the two scales was followed. All reliability indices were satisfactory ranging from 0.78 to 0.92.

Table 1:*Reliability estimates for the sub-scales of the survey tools. (Cronbach's α indices of the subscales used in the survey).*

Perceived self-efficacy in Career Questionnaire	Cronbach's alpha	Number of Items
Career Management	0.911	5
Career Skills	0.921	7
Flexibility at Work	0.864	4
Creativity at Work	0.884	5
Job Crafting Questionnaire (JCQ)		
Task Crafting	0.775	5
Cognitive Crafting	0.906	5
Relational Crafting	0.800	5

Descriptive Statistical Indicators for each factor

For the needs of the analyses the average answers of the participants were calculated in the factors in which scales of Self Efficacy in career planning and JCQ are compounded. The possible width of the values for the 4 factors of Self-Efficiency Scale in Career Planning, was from 1 to 5, and for the 3 dimensions of JCQ Scale, was 1 to 6. Regarding the descriptive statistical indicators for the 7 factors, it is noted that the participants show high scores for all factors. Table 2

Table 2.*Descriptive statistical indicators for the sub-scales of the questionnaires*

	N	Average	Median	Standard deviation	Minimum value	Maximum value
Career Management	227	3.85	4.00	0.812	1.00	5.00
Career Skills	227	4.02	4.00	0.753	1.00	5.00
Flexibility at Work	227	3.91	4.00	0.810	1.00	5.00
Creativity at Work	227	3.81	4.00	0.770	1.00	5.00
Task Crafting	227	4.15	4.20	0.912	1.60	6.00
Cognitive Crafting	227	4.65	4.80	1.073	1.00	6.00
Relational Crafting	227	4.27	4.20	1.083	1.00	6.00

Table 3:*Effect of employee employment on self-efficacy*

		SS	Df	MS	F	Sig.
Career Management	Between Groups	4.179	2	2.090	3.235	**.041**
	Within the Groups	144.688	224	.646		
	Total	148.867	226			
Career Skills	Between Groups	2.378	2	1.189	2.119	.123
	Within the Groups	125.713	224	.561		
	Total	128.092	226			
Flexibility at Work	Between Groups	3.329	2	1.665	2.571	.079
	Within the Groups	145.034	224	.647		
	Total	148.363	226			
Creativity at Work	Between Groups	1.398	2	.699	1.182	.309
	Within the Groups	132.489	224	.591		
	Total	133.887	226			

Table 4: ***LSD test for Career Management Factor***

Employment Sector (I)	Employment sector (J)	M D ((I-J)	Std Error	Sig.
Servant	Private employee	-.21193	.11735	.072
	Freelance	-.36500*	.16405	**.027**
Private employee	Civil servant	.21193	.11735	.072
	Freelance	-.15307	.17297	.377
Freelance	Civil servant	.36500*	.16405	**.027**
	Private employee	.15307	.17297	.377

The Impact of the Employment Sector on Perceived Self – Efficacy in Career

In relation to the Impact of the Employment Sector on self-efficacy, the results of the analysis showed a statistically significant difference in the Career Management factor. We went further with Criterion t to identify where the differences are.(Table 3)

The Impact of the Employment Sector on on Perceived Self – Efficacy in Career

There was a statistically significant difference between the employees of the public sector and the freelancers. Freelancers appear to be more proficient in their career challenges. *Table 4*

The Impact of the Employment Sector on the Job Crafting Components

Regarding the impact of the employment sector on the Job Crafting components, there are statistically significant differences between the Task Modification and Modification of Perspectives factors. To find out exactly where these differences lie, we have gone through further scrutiny (One way anova was used, LSD for both factors).Table 5

Table 5: *The Impact of the employment sector on the three job crafting factors*

		SS	Df	AS	F	Sig.
Task Crafting	Between Groups	8.386	2	4.193	5.228	.006
	Within the Groups	179.660	224	.802		
	Total	188.046	226			
Cognitive Crafting	Between Groups	8.263	2	4.131	3.674	.027
	Within the Groups	251.864	224	1.124		
	Total	260.126	226			
Relational Crafting	Between Groups	6.126	2	3.063	2.648	.073
	Within the Groups	259.111	224	1.157		
	Total	265.237	226			

Table 6:*LSD control for Job crafting factors in relation to the employment sectors*

Depended Variable	Employment Sector (I)	Employment sector (J)	MD (I-J)	Std Error	Sig.
Task Crafting	Civil servant	Private employee	-.28773*	.13077	**.029**
		Freelance	-.52833*	.18281	**.004**
	Private employee	Civil servant	.28773*	.13077	.029
		Freelance	-.24061	.19275	.213
	Freelance	Civil servant	.52833*	.18281	.004
		Private employee	.24061	.19275	.213
Cognitive Crafting	Civil servant	Private employee	-.36284*	.15483	**.020**
		Freelance	-.42500	.21645	.051
	Private employee	Civil servant	.36284*	.15483	.020
		Freelance	-.06216	.22822	.786
	Freelance	Civil servant	.42500	.21645	.051
		Private employee	.06216	.22822	.786
Relational Crafting	Civil servant	Private employee	-.23550	.15704	.135
		Freelance	-.46000*	.21954	**.037**
	Private employee	Civil servant	.23550	.15704	.135
		Freelance	-.22450	.23148	.333
	Freelance	Civil servant	.46000*	.21954	.037
		Private employee	.22450	.23148	.333

In relation to the function "**Task Crafting**", there are statistically significant differences between public and private employees, and among civil servants and freelancers. Private employees and freelancers devote more time, attention and energy to modify their jobs and take on additional tasks compared to civil servants. In **"Cognitive Crafting**" and "**Relational Crafting**", differences are presented between civil servants and freelancers. Freelancers alter their perceptions of work and their working relationships more easily and to a greater extent than civil servants.Table 6

The effect of the employment type on the components of Job Crafting

There are statistically significant differences between the managerial and executive staff, regarding the impact of the type of employment (3). Managerial staff presents higher averages for all three factors. It seems that directors are changing their duties, perceptions and relationships in their jobs to a greater extent than employees in executive jobs. Table 7

Differences in correlations among Perceived Self-Efficacy in Career and Job Crafting

Regarding the correlations between Self-Efficacy in Career and Job Crafting, we observe that all indicators are positively correlated, which shows that an increase in the average score of one factor results in an increase in the average score of the other factor. Strong correlations are presented between the factors of the *Self-Efficacy in Career Scale*"Flexibility at Work" and "Career Skills","Career Management" and "Career Skills", "Flexibility at Work" and "Creativity at Work". In relation to the *Job Crafting Scale*, there is a relatively high positive correlation between the "Change of Perceptions" and

Table 7:*Levene's and t-tests for the 3 factors in relation to the type of employment 3*

		Levene'sTest for Equality of variance		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tail)
Task Crafting	Equal variance assumed	.825	.365	2.892	225	.004
	Equal variance not assumed			3.016	59.552	.004
Cognitive Crafting	Equal variance assumed	.610	.436	2.547	225	.012
	Equal variance not assumed			2.594	58.020	.012
Relational Crafting	Equal variance assumed	.524	.470	2.245	225	.026
	Equal variance not assumed			2.412	61.659	.019

Table 8:*The correlations (affinities) among the 7 factors of the questionnaires*

		Career Management	Career Skills	Flexibility at Work	Creativity at Work	Task Crafting	Cognitive Crafting	Relational Crafting
Career Management	pearson correlation	1	.791	.774	.703	.358	.389	.356
Career Skills	pearson correlation	**.791**	1	.799	.744	.327	.367	.306
Flexibility at Work	pearson correlation	.774	.**799**	1	.782	.422	.400	.401
Creativity at Work	pearson correlation	.703	.744	.782	1	.409	.381	.440
Task Crafting	pearson correlation	.358	.327	.422	.409	1	.476	.519
Cognitive Crafting	pearson correlation	.389	.367	.400	.381	.476	1	.579
Relational Crafting	pearson correlation	.356	.306	.401	.440	.519	.579	1

“Relationship Modification” factors. There is a moderate correlation between factors of the two questionnaires. The correlation lies between the factors “Creativity at Work” and “'Relationship Modification”. There is a low positive correlation between the other factors of the two different tools. Table 8

CONCLUSIONS

The results confirm that Scale Research is a reliable tool. The high scores of all factors in the Perceived Self-Efficacy in Career indicate that Cypriot workers are self-effective in their jobs. An alternative explanation may be that people who have developed perceived self-efficacy in career behaviors are more likely to hold a job and developawareness of helpful career management strategies. High scores on all three components of the JCQ Scale show that participants are engaged in preventive behaviors and alter their duties, perceptions and relationships in the workplace.People's personal beliefs about their ability to meet their goals and effectively address different career issues are not attributable to gender (a finding confirmed by scale makers) (Sidiropoulou - Dimakakou, Mylonas, &Argyropoulou, 2015), age, educational level and three types of employment (Physical - Spiritual, Specialized - Unskilled, Managerial - Executive).Changes made by

employees to their jobs are not related to gender, age, educational level and the two types of employment (Physical - Spiritual, Specialized - Unskilled).

Freelancers have a greater ability to adequately address their career, practical or emotional issues.The majority of the sample has not changed a profession, thus we conclude that engaging with Job Crafting is linked to the work commitment. This result is consistent with the literature and related studies (Schaufeli et al. (2002), Mäkikangas A, (2018)), on the basis of which, creating a climate of trust, devotion and emotional bond between workers and the organization (Le Blanc et al. 2007), improves the wellbeing of the employees and at the same time it makes them more productive (Tims, Bakker, &Derks, 2015).

Private employees and freelancers devote more time, attention and energy to modify their jobs and take on additional tasks compared to civil servants. Freelancers alter their perceptions more easily and think that their work has a positive effect on both themselves and the organization. By cognitively putting their work in a wider context, they change the way they perceive the value they attribute to themselves. It seems that they are doing so to gain valuable experience and develop skills, so they can deal with tasks that are challenging, and experience satisfaction and completeness.At this point, the findings are consistent with relevant research, where workers engaged in proactive behaviors strengthen their jobs and improve their performance and well-being by taking on more challenges rather than reducing expectations (Gordon et al , 2015).

Freelancers modify their working relationships to a greater extent than public servants. Therefore, they increase their initiative and create a collaborative network that allows them to expand their knowledge and develop skills by exchanging views and creating new ideas and opportunities. Perhaps this finding is due to the fact that freelancers have more freedom in their jobs than civil servants, as well as more incentives, because social networking and increased returns are directly related to their income. Employees in managerial positions, modify their duties, thinking, and relationships in the work place to a greater extent than employees in executive jobs. The results confirm that Job Crafting is related to the position in the hierarchy, and they agree with the relevant bibliography, which states that the employees in high-ranking jobs feel the need to modify their work with the ultimate goal being their personal satisfaction (Berg, Wrzesniewski and Dutton, 2010).

In relation to the correlations of the Perceived Self-Efficacy in Career, the easier the Cypriot workers adapt to the transitions in their work, the better the organization and the execution of a job by themselves. When they are more proficient in their career issues, they develop more skills related to better organization and execution of a job. The easier they adapt to transitions and changes at work, the more resourceful and creative they are. With regard to the correlations of the Job Crafting Scale, Cypriot workers with a great capacity for cognitive change also have greater ability to establish relationships with people from their workplace. The correlation between the factors of the two questionnaires, Creativity at Work and Relationship Modification, shows that Cypriot employees who have great inventiveness and creativity also have the ability to establish relationships with people from their workplace that allow them to create a social network and public relations, but there is a low positive correlation between the other factors of the Self-Efficiency Scale in Career Planning and the other dimensions of Job Crafting.

Regarding the limitations of the survey, sample size (n = 227) is limited and there is a need for further research. It was not possible to check the representativeness of the sample. The two concepts have not been examined over time, thus it can't be argued that High Self-Efficiency in Career Designing results in a high degree of engagement with Job Crafting or, conversely, that Job Crafting is a factor in mobilizing Self-Efficacy in Career.The method of collecting the Sample does not allow generalization of the results. The findings apply only to populations with characteristics similar to those in the Study Sample.

Practical Implementation of Research

The results of this study are expected to be used as research data for the impact of Job Crafting and self-efficiency of career planning of Cypriot workers.They can also be used by business consultants for relevant surveys with more or different demographic variables that may give a clearer picture of how employees are involved in preventative behaviors.They could also be useful for the Cypriot state, since they showed that civil servants are not so self-efficient and do not engage in Job Crafting as opposed to workers in other sectors.Furthermore, high unemployment rates, migratory flows and various economic and social problems create vulnerable groups of our fellow citizens and need to be addressed professionally.Competent bodies may wish to carry out further investigations and, if generalized, to create structures to empower both civil servants for the benefit of both themselves and the state as an employer as well as vulnerable groups, cultural diversity.Finding through research that workers engaged in proactive attitudes are boosting their jobs and improving their performance and well-being by raising challenges rather than lowering demands, gives optimistic messages.Confirm that a professional assessment from a guidance counselor can help any person to claim a position in the job market, cultivate attitudes and behaviors to plan and manage his/her career in the best possible way.
Regarding future research the concepts under consideration, based on:

- The total of the economically active population of Cyprus,
- National culture and cultural diversity,
- Benefits for both employees and organizations,
- Other variables that are directly related to employees and organizations, such as income, stress, etc., Different ways of collecting the data.

Considering today's reality, a large number of people working in Cyprus are foreigners and another is unemployed. Conducting surveys on the whole of the economically active population of Cyprus will provide relevant and perhaps more interesting information regarding professional counseling.It would be of certain academic interest to conduct research both in Cyprus and abroad to check whether there are differences between the concepts under consideration based on national culture and cultural diversity.

Research into the concepts of self-efficacy and engagement with Job Crafting could be conducted to explore the benefits for both workers and organizations. Carrying out research on the same topic in a different way, such as personal interviews, would improve the validity of the results. Electronic compilation of information may be flawed. Surveys that include other variables that are directly related to workers and organizations, such as income, stress, etc., may give a clearer picture of how Cypriot workers are involved in preventive behaviors.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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5E Learning Cycle Instructional Model: A Constructivist Approach in Teaching Science to Pupils with Visual Impairment

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This paper presents the 5E learning cycle instructional model as a constructivist approach in teaching pupils with visual impairment. The definition of 5E learning cycle model is defined to set the tone of the discussion. More so, the stages of 5e learning circle instructional model are outlined. The paper also highlights educational considerations in teaching science to pupils with visual impairment Inquiry based learning for pupils with visual impairment in science classrooms was presented. Constructivism in science teaching and learning was also examined. In addition, the benefits of 5e learning circle instructional model to pupils with visual impairment. Finally, a way forward was presented in terms of modification of the curriculum for pupils with visual impairment in order to accommodate learners with through the effective use of 5E learning cycle instructional model

Keywords: 5E learning cycle instructional model, science teaching and learning, visual impairment

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INTRODUCTION

Over the years, Science teaching has relied on methods that train pupils to follow directions with little connection to inquiry based teaching methods and pupils have become accustomed to this method of learning, most of which do not form a deep conceptual understanding of Basic Science and Technology (Nadelson, Williams & Turner, 2005). The most prominent among these methods is the textbook approach which is more challenging to pupils with visual impairment due to lack of vision to see diagrams and illustrations replete in textbooks. Pupils are also unable to carry out experiments, measurements and observation which are core activities in explaining and describing concepts in Basic Science and Technology lessons. The Education Development Centre (2007) asserts that 38% of pupils with visual impairment hardly receive any instruction in Science and 90% of teachers who teach Basic Science to pupils with visual impairment often employ the text-book approach in teaching.

Visual impairment is an umbrella term that is often used to describe a loss of vision that usually occurs even if the individual uses corrective lenses and can be as a result or consequence of a number of different medical/health conditions. As asserted by Erin (2003), it is one of the most prominent low incidence disabilities affecting approximately 1 in 1000 pupils globally. The nature and degree of visual impairment may vary significantly. Each student may require individual adaptations to instructional practices/experiences as well as specialized materials in order to learn effectively.

There is a decreasing popularity of science among pupils and students with visual impairment as evidenced

by the declining number of these pupils opting for choosing science subjects in Nigeria (Omalase, Fadamiro, Omolase, Aina, &Omolade, 2008). The decline in number of these pupils as observed may be due to the text-book approaches adopted by teachers in teaching Basic Science and Technology to pupils with visual impairment. This approach often makes the subject appear difficult, tedious and boring. It provides little opportunity for students to assess how well they are learning the content. Pupils do not usually ask many questions because they are not able to understand some abstract and difficult Basic Science and Technology concepts including water evaporation and forms, parts and functions of the human heart, measurement of length and volume among other concepts that involve experiments, observation, description and measurements.

Pupils with visual impairment have over the years received instruction through deductive approaches. In this situation, Stofflett (1998) posits that pupils are expected to blindly accept the information they are given without questioning the instructor while they are not always engaged in activities that will promote learning. The various categories of pupils with visual impairment (low vision and total blindness) should be taught with instructional strategies that will suit their unique learning needs. Pupils with visual impairment in Nigerian primary schools (inclusive or special) often need accommodations in order to effectively and fully access the curriculum.

Consequently, there is a total dissatisfaction on how science is still traditionally being taught to pupils with visual impairment (Yaksat& Hill, 1994). This dissatisfaction and its inherent challenges have led to a major shift towards inquiry-based practices in the teaching and learning of Basic Science and Technology. This major shift towards inquiry-based approaches in science has led to the development of the 5E instructional model. However, literature is replete with the 'E' learning circle models such as 3E, 4E, 5E, 6E, and 7E. This study is hinged on the 5E instructional model. The 5E model is an example of a structured inquiry learning circle approach developed in the mid 1980's by principal investigator Roger Bybee and his team members: Joseph Taylor, April Gardner, Pamela Scotter, Janet Powell, Anne Westbrook, and Nancy Landes. It was developed specifically for Science programmes and it is used in the Biological Science Curriculum Study (BSCS). The model is aimed at transforming the teaching and learning of science that is based on most recent research, ensures scientific accuracy, includes field test with diverse pupils (including pupils with visual impairment) in diverse settings and upholds the principle of universal design for learning amongst others (Bybee et al. 2006).

The American Council of the Blind (2015) maintains that pupils with visual impairment typically learn inductively (progressing from local, specialized knowledge to more general conceptual knowledge) in addition to providing adequate descriptions that can help them master the concepts underpinning the deductive learning. Therefore, they require inductive instructional approaches that will give them the opportunity to explore using the senses they often rely on due to lack of sight (hearing, tactile/kinesthetic, olfactory).

THE 5E LEARNING CIRCLE INSRUCTIONAL MODEL

The learning circle model is an instructional model based on the constructivist approach. It was first developed by Robert Karplus and the learning circle involved three consecutive phases known as the exploration, concept introduction and concept application. The learning circle has been embraced in science teacher education as a suitable approach that is consistent with the goals of the National Science Education Standards (Rubba, 1992).

According to Opara and Waswa (2013), the learning circle is a model which builds on students' prior knowledge but also shifts emphasis from the instructor to the learner and the active role played by the learner in the learning process. The learning circle approach which has been extensively used since its origin in the 1960s has been revealed by several research studies that it can result in greater achievement in science, better retention of concepts, improved attitudes towards science and science learning, improved reasoning ability and superior process skills than would be the case with the traditional instructional approaches (McComas III, 1992).

The 5E Learning Circle Model is further presented in this diagram: (Figure 1)

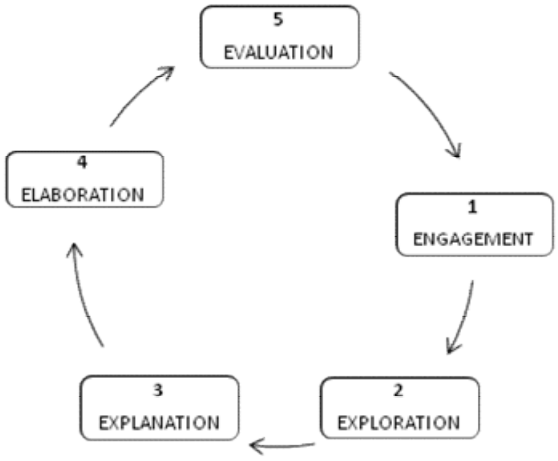

Figure 1: The 5E Learning Circle Instructional Model.
Source: Latrobe University (n.d)

The diagram on above presents a representation of the 5E starting with and cumulating with the evaluation stage. However, each stage has a specific function and contributes to the coherent instruction of the teacher as well as to students' formulation of a better understanding of scientific and technological knowledge, attitudes and skills. Each stage is an essential component of the 5E Learning Circle Model. The 5E Instructional Model as the name implies, constitutes five discrete elements such as: Engagement; Exploration; Explanation; Elaboration and Evaluation. Each phase of the model, according to the Biological Science Curriculum Study (BSCS, 2015) indicates its purpose from both teachers and pupils' perspectives to include: engagement (pupils prior knowledge accessed and interest engaged in the phenomenon); exploration (pupils participate in an activity that facilitates conceptual change); explanation (pupils generate an explanation of the phenomenon); elaboration (pupils understanding of the phenomenon is challenged and deepened through new experiences) and evaluation (pupils assess their understanding of the phenomenon). The exploration phase is very important for pupils with visual impairment as it gives them the opportunity to explore (examine) real objects or models of objects tactually while the elaboration phase gives them the opportunity to clear doubts or misconceptions that may arise after the exploration phase. The 5E instructional model helps to develop pupils' critical thinking skills, ensures adaptability, encourage complex communication, self-development and teamwork. As opined by Balci, Cakiroglu and Tekkaya (2006), once students become aware of their own reasoning and apply new knowledge successfully, they are more effective in searching for new patterns

STAGES OF 5E LEARNING CIRCLE INSTRUCTIONAL MODEL

The 5E learning model sequences learning experiences so that students have the opportunity to construct their understanding of a concept over time. The model leads students through five phases/stages of learning that are easily described using words that begin with letter E: thus: E-Engage, E- Explore, E-Explain, E- Elaborate and E- Evaluate. The 5Es according to Abraham (1998) involves a learning circle approach that incorporates scientific inquiry and modeling. Each of the 5Es is implemented thus: a) engagement (to access prior knowledge and purposeful create connections between past and present learning experiences); b) exploration (to allow students to generate new ideas and explore questions, design and conduct investigations); c) explanation (to make sense of a phenomena); d) elaboration (to use new experiences to challenge, apply and develop understanding and infused throughout the model) and e) evaluation (to use assessment throughout the entire learning process.

According to Ansberry and Morgan (2007), the 5E learning circle model provides a planned sequence of instruction that places students at the center of their learning experiences, encouraging them to explore, construct their own understanding of scientific concepts and relate those understandings to other concepts. The stages/phases of 5E learning circle model are further described below:

Engagement phase (E1): Teachers accessed pupils' prior knowledge and helped them become engaged in a new concept through the use of short activities that generated enthusiasm and accessed prior knowledge. The activities helped to make connections between what pupils with visual impairment know and can do, expose prior conceptions, and organize pupils' thinking toward the learning outcomes of the current topic.

Exploration phase (E2): Exploratory experiences provided pupils with visual impairment with a common set of experiences within which present concepts (i.e., misconceptions), processes, and skills were reflected and conceptual change was facilitated. Pupils with visual impairment had the opportunity feel and touch objects (real life and models) in order to have clearer understanding of concepts introduced in a lesson and pupils compared ideas that identified inadequacies of current concepts. Learners were not just passive receptors, they also had chances to acquire knowledge actively. They were given opportunities to manipulate materials using existing knowledge to generate new ideas, explore questions and possibilities, and execute preliminary investigations.

Explanation phase (E3): In this phase, there was more interaction between teachers and pupils with visual impairment. The explanation phase focused pupils' attention on a specific aspect of their engagement and exploration experiences and provided opportunities for pupils to demonstrate their conceptual understanding, process skills, or behaviors. This phase also provided opportunities for teachers to use direct instruction. Pupils with visual impairment also explained their understanding of the concept. An explanation from the teacher or the curriculum was provided to serve as a guide them to modify and enhance their conceptual understanding.

Elaboration phase (E4): Teachers challenged and extended students' conceptual understanding and skills at this phase. Through the new experiences, pupils learned to develop broader and deeper understanding and adequate skills, and perhaps acquired additional information.

Evaluation phase (E5): The evaluation phase encouraged pupils with visual impairment to assess their understanding and abilities and provided opportunities for teachers to evaluate pupils' progress toward achieving the learning goals.

EDUCATIONAL CONSIDERATIONS IN TEACHING SCIENCE TO PUPILS WITH VISUAL IMPAIRMENT

Teachers of pupils with visual impairment often find it challenging to explain certain concepts to pupils with visual impairment especially abstract concepts. These pupils miss out of teaching and learning experiences due to lack of vision as it is believed that 80% of what pupils learn is through visual cues; the other senses do not fully compensate for the loss of sight. Therefore, touch and hearing are substitutes/alternative senses that pupils with visual impairment often rely on to learning (Project IDEAL, 2013). They require compensatory skills and adaptive techniques in order to be also to acquire knowledge through other methods than the use of sight. This is due to the fact that they cannot learn effectively through visual cues rather; they can benefit maximally from instructions through verbal and tactile cues. Dion, Hoffman and Matter (2000), added that sighted persons create abstract concepts by putting many characteristics in a group. These abstract concepts can be used to classify and understand objects. However, this is not applicable to individuals with visual impairment who has concrete concept of the world. The objects that are tactually explored and identified will have meaning but a picture of the same object will be difficult to identify.

According to Riley (2000), adaptation to vision loss is shaped by many factors such as availability and type of family support and also degree of intellectual emotional, physical and motor functioning. In addition to the nature and extent of vision loss, a variety of factors needs to be considered in designing an appropriate educational programme for a child who in be totally blind or having low vision. These factors may also change over time based as the pupils with visual impairment progresses. As opined by Curry and Hartlen (2007), pupils with visual impairment deserve the same instruction in reading, mathematics, social studies; language arts etc. that their seeing peers receive. Therefore, pupils with visual impairment deserve chronological age and developmentally appropriate instruction in the skill areas required to meet their needs as pupils with visual impairment. The first step in providing educational programmes for pupils with visual impairment is to know their status in order to categories them accordingly. Pupils with visual impairment can be assessed through expert diagnostic screening procedures involving such test as visual acuity test, colour test, visual field test and ocular mobility tests (Arthur &Lan, 2001). Visual acuity assessment is inevitable in educational school setting because and it can easily be carried out and teachers of pupils with visual impairment as well as general classroom teachers can easily administer it as well as derive meaning from it. In addition, it will enable teachers and administrators to provide adequate materials for instruction and placement options that will meet the unique educational needs of pupils with visual impairment in schools.

Programme considerations for pupils with visual impairment should be based on sound practices including the use of concrete (not abstract) teaching methods and also stressing the relationship among objects in the environment. Students with visual impairment need instruction in braille large print, auditory or other alternate formatted materials computer and other assistive technologies etc. In line with the above assertion, Project IDEAL (2013) maintains that individualized instruction should be provided for pupils with visual impairment as well as adaptation of classrooms to

accommodate them, provision of materials in the appropriate media (braille, recorded media), computer adaptations through the use of assistive media etc.

INQUIRY BASED LEARNING FOR PUPILS WITH VISUAL IMPAIMENT IN SCIENCE CLASSROOMS

Science education is aimed at developing cognitive skills while engaging pupils in different scientific activities. According to Shaheen, Alam, Mushtaq&Bukhar, (2015), some of these cognitive skills include adaptability, communication/social skills, non-routine problem solving and self-management/self-development and system thinking. In order to develop these cognitive skills, teachers need to be very careful while choosing instructional models that will be suitable for different categories of learners. Students with visual impairment irrespective of their visual loss have the right to acquire scientific skills that will enable them to explore and understand the world around them. Teaching these skills to pupils with visual impairments usually pose a serious challenge to teachers as well as parents.

Willings (2014) asserts that a student who is blind or visually impaired will typically need some accommodations in order to safely and fully access the science curriculum. It is important to meet with the teacher of pupils with visual impairments to discuss the curriculum, objectives and content that will be covered during the school year. Pupils' unique visual needs should be taken into consideration when determining learning materials and instructional pedagogies. These science materials may include measuring devices, charts, reading materials and equipment. Dion, Hoffman and Matter (2000) asserted that pupils with visual impairment tend to conceptualize concretely. Since the concepts based on visual information, a pupils' ability to form these concepts depends on their amount or residual vision. Pupils often rely on tactual and audible materials for learning. Conversely, tactual and audible methods can be time consuming and limited. While exploring or learning about something tactually, the pupil must be able to explore all parts of the object and also when learning audibly, a pupil must have an accurate description to obtain a clear understanding.

As a child with visual impairment attends school, he/she is likely to be excluded from various practical aspects of Basic science and technology as well as mathematics thus receiving an education that is far from being adequate in preparation for life in an increasingly scientifically and technologically oriented country such as Nigeria (Hill &Jurmang, 1996)

In the same vein, Crawford (2000) maintains that inquiry learning is an action-based approach to learning that "supports teachers to facilitate students reconstructing their own knowledge through a process of interacting with objects in the environment and engaging in higher thinking and problem solving. Inquiry provides students the opportunity to ask thought provoking questions not normally posed in a general science classroom (Scott, 1994; Rop, 2003). This is particularly beneficial to students with visual impairment who do have the opportunity to access visual information and rather depends on tactile and verbal instructions. They ask questions based on what they touch, feel and/or hear the teacher or their peers emphasize. The greatest evidence of the power of inquiry in the classroom is that students feel empowered of being able to make their own choices (Marrero, 2000).

As revealed by Smith (2013), there has been little change in pupils engaging in active exploration of phenomena, ideas and relevant Science questions or the use of open investigations. This is apparent when pupils involved have impaired vision and teachers tend to justify the non-involvement of pupils in Science lessons which are mostly experimental in nature due to their lack of sight and have little or nothing to benefit from such learning instruction. Teachers of pupils with visual impairment are not aware of the appropriate inquiry-based teaching/learning strategies they can adopt in teaching Basic Science to pupils with visual impairment at the elementary school level. This statement is ascertained in various studies and reports on elementary science education which identified three major challenges of elementary science teachers to include: (1) limited pedagogical science subject matter knowledge;(2) their limited science subject matter knowledge; (3) low confidence and self-efficacy with science content and science teaching (Tosun, 2000; Lee &Houseal, 2003; Cone, 2009; Appleton, 2007; Minger& Simpson, 2006,). These challenges are more evident when pupils involved have visual impairment and cannot benefit maximally from visual materials in science classrooms.

Zaborowski as cited in Wild and Allen (2009) maintains that there is paucity of research-based science education practices for students with visual impairment and therefore the need for a more research- based accommodation for this category of pupils is inevitable. More so, Ajaja and Urhievwejire (2013) asserts that literature on science education methods in Nigeria indicates that studies on learning circle models are scanty and unavailable. According to the authors, this implies that there is a general poor knowledge of learning circle procedure and its effectiveness in instructional delivery among science educators, researchers and science teachers.

As observed by the National Research Council (NRC, 1996), the American Association for the Advancement of Science, (AAAS, 1993) and the National Science Education Standards (NSES, 1996) as well as the Benchmarks in Science Education advocated the creation of inclusive science education, which encompasses all students regardless of

race, nationality and cultural background. Therefore, all children (with or without a special need) including children with visual impairment should be given the opportunity to acquire scientific skills. As Science opportunities for children with special educational needs are often restrictive and sometimes non-existent. Learning science through the inquiry method promises to improve students understanding, participation and enjoyment in relation to scientific activities and contributes to improving general education (Harlen& Allende, 2006).

According to Rooks-Ellis (2014), a child with visual impairment cannot develop concepts when relevant experiences are deficient. If a child's concept is deficient, then the child's learning and understanding of world meanings also will not develop. Science instructional practices focused on scientific inquiry and modeling can help learners develop deep understanding of subject matter and to develop science process skills (Lehrer &Schauble, 2000; Schwarz & White, 2005). This is due to the fact that pupils build new knowledge and understanding to learn science as this according to Brandsford, Brown & Cocking (2000), is based on a) what they already know and believe b) modifying and refining their current concepts and c) by adding new concepts to what they already know. This implies that effective learning of science concepts requires that students take control of their own learning.

CONSTRUCTIVSM IN SCIENCE TEACHING AND LEARNING

Constructivism is divided into three broad categories: cognitive constructivism, social constructivism and radical constructivism. However, this study is hinged on the cognitive constructivism because the philosophy of inquiry-based learning finds its antecedents in constructivist learning theories. Generating information and making meaning of it is based on personal or societal experience which is also referred to as constructivism (Glassersfeld, 1995; Bachtold, 2013). The learning Circle Model is based on Piagets theory of cognitive learning and the cognitive constructivism theory is also referred to as trivial constructivism (Bevevino, Dengel& Adams, 1999).

Inquiry is congruent with constructivist teaching ideology (Adams, & Hamm, 1998; Llewellyn, 2002; Etheredge&Rudnifsky, 2003) which emphasizes students' prior knowledge as the foundation of further learning. This implies that previous knowledge of students is relevant especially to pupils with visual impairment in building new knowledge and promoting active learning. Constructivism has its origins in Vygotsky's (1978) work on child development and education. The key to this teaching strategy is having students get involved in any learning activity. Rhinehart (2012) maintains that the constructivist learning theory operates on the principle that students build knowledge based on prior knowledge. Constructivism theory avoids direct instruction. Instead the teacher guides students in discovering knowledge on their own. According to Fletcher, Meyer, Barufald, Lee, Tinoca and Bohman (2004), constructivist pedagogies that consider scientific literacy to best foster science literacy for all students is recommended. Pupils with visual impairment require a constructivist approach which promotes conceptual change, exploring of the environment and enables them become aware of their own reasoning and apply new knowledge successfully. As revealed by Landau (1993) a pupil with visual impairment cannot develop concepts when relevant experience is deficient due to their lack of vision. The child's learning and understanding of word meanings will also not develop due to his/her vision loss. Therefore, a pupil with visual impairment requires an inquiry based instructional strategy such as the 5E learning circle inquiry model in order to easily understand concepts most especially, Basic Science and Technology.

According to National Institute of Health (NIH, 2010), the guidelines for lesson planning maintains that students are active thinkers who construct their own understanding from interactions with phenomena, the environment and other individuals is based on the theory of constructivism. A constructivist view of learning recognizes that students need time to: a) express their current thinking; b) interact with objects organisms, substances and equipment to develop a range of experiences on which to base their thinking; c) reflect on their thinking by comparing what others think; and d) make connections between their learning experiences and the real world

As postulated by the Science Academic Content Standards (2005), the essential features of constructivist learning is: (a) learning is active (b) learning is interaction of ideas and processes (c) new knowledge is built on prior knowledge learning is enhanced when situation in contexts that students find familiar and meaningful (d) complex problems that have multiplied solutions enhance learning (e) learning is augmented when students engage in discussion of the ideas and processes involved. This implies that teachers often sets up problems and monitors students' exploration, guides students inquiry and also promotes new patterns of thinking for students based on prior knowledge. According to Fittel, (2010), a key element of constructivist pedagogies is recognizing the role of prior knowledge in learning. Therefore, learning takes place by evaluating the prior knowledge of the learners and introducing a new concept based on the already existing knowledge.

BENEFITS OF 5E LEARNING CIRCLE INSTRUCTIONAL MODEL TO PUPILS WITH VISUAL IMPAIRMENT

There have been debates over the merits and limitations of inquiry and direct approaches to teaching science with strong opinion on both sides. The direct side is leading in recent years with the formulation of the national and state education science education standards where inquiry has become the *sine qua non* for science instruction for all categories of learners including pupils with visual impairment (Albert, 2008). Science should not be about regurgitating definitions and facts told by a teacher. It should entail detailed explanations and exploration to describe difficult concepts to learners. Gago, (2006) posits that it should be about pupils collecting information and definitions and using them to draw conclusions of their own and through their own analysis, questioning and data collection.

The 5E model of instruction has had a positive impact on student learning because it has been proven to motivate students with the fun activities that are often involved in lessons (Boddy, Watson & Aubusson, 2003). In the same vein, 5E model allows students to gain scientific knowledge taught to them based on prior experiences and allows them to go through a series of steps to construct new knowledge based on what is in their existing knowledge. According to the Bright Hub Education (2012), the advantages of an inquiry based learning includes the following: a) students using an inquiry based learning approach take responsibility for their learning tasks; b) students are actively involved in the planning and preparation phase and develop skills in these areas and c) teachers are able to develop “softer skills” in their students such as cooperation, teamwork, planning and organization and creativity, all of which are vital and are often the focus of many and varies special education teaching strategies used throughout the curriculum.

The 5E learning circle model helps to develop students’ critical skills to help them adapt better to the demands of the 21st century. This includes adaptability, complex communication or social skills, non-routine problem solving, self-management or self-development and systematic thinking. Previous woks on the use of 5E instructional application in teaching various subjects have found that this is more effective compared with traditional methods in developing conceptual understanding among students (Akar, 2005; Hanuscin& Lee, 2008; Yalcin&Ayrakceken, 2010).

A WAY FORWARD

Based on the above discussion, it is recommended that schools (special and inclusive) should adapt the use of 5E Instructional Model in the teaching of science related subjects. This is because teaching science involves experiments, exploration, observations, measurement etc. which involves the use of sight. Therefore, there is need to adapt a teaching model that will enable pupils’ benefit maximally in Science classrooms.Teachers of pupils with visual impairment should give pupils with visual impairment the opportunity to explore their environment in order to actively participate in science classrooms. Therefore, the use of 5E Instructional Model takes pupils through the five stages of learning (engage, explain, explore, elaborate and evaluate) should be adopted and implemented. More so, teachers of pupils as well as students with visual impairment should be effectively trained on the knowledge, use and procedure of the 5E Instructional Model for effective use in Science classrooms at all levels of education (elementary to tertiary).

CONCLUSION

Due to the fact that pupils with visual impairment benefit little or nothing from a text-book approach, especially when they are taught difficult science concepts due to their lack of sight, there is need therefore to provide them with learning experiences that will compensate for the loss of sight as well as meeting their unique learning needs in science classrooms. More so, effective planning, reorganization and modification the curriculum for pupils with visual impairment is necessary in order to accommodate learners with visual impairment. This will encourage flexibility in the adoption 5E Instructional Models in providing meaningful learning experiences in teaching Basic Science and Technology in classrooms.

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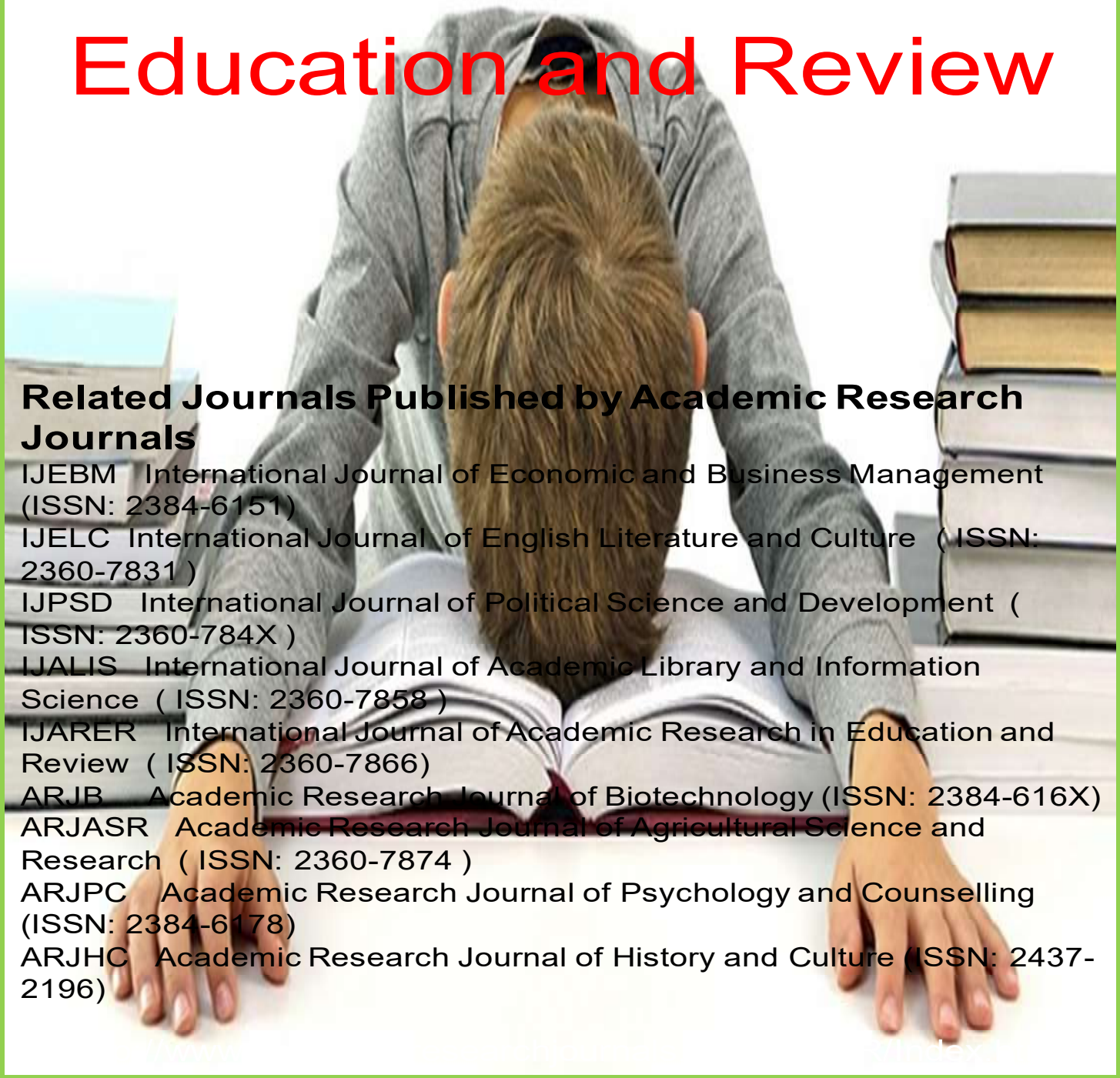

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