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Vol. 7 No. 1, 2018

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Vol. 7/No. 1 December 2018

JOURNAL OF INTERDISCIPLINARY STUDIES IN EDUCATION

Vol. 7/No. 1 December 2018

JOURNAL OF INTERDISCIPLINARY STUDIES IN EDUCATION

A Biannual International Refereed Journal

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Printing: 2018
Published by: STAR Scholars Network

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Journal of Interdisciplinary Studies in Education
http://ojed.org/index.php/jise
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Volume 7, Issue 1 (2018)
http://ojed.org/index.php/jise
ISSN: 2166-2681

TABLE OF CONTENTS

Peer-Reviewed Article

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Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 1-18
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1866595

Fun and Function? The Impact of Experiential Learning Styles on Hedonic and Utilitarian Values in Classrooms

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ABSTRACT

This study examines how components of experiential learning styles influence the hedonic and utilitarian values of classrooms in higher education. These values are argued to impact on emotions and learning outcomes. A survey was employed with university students in different universities. Findings show concrete experience has a positive impact on both hedonic and utilitarian values. These findings emphasize that those students that score higher on the concrete experience scale tend to consider classrooms as more important regarding their utilitarian and hedonic values. These students are suggested to be more influenced by experiential designed classrooms that impact their learning outcomes.

Keywords: Hedonic and utilitarian values; Higher education; and Learning styles

Teaching in the classroom is mostly based on visual presentations combined with verbal cues in written or spoken form (Irvine Clarke, Flaherty, & Yankey, 2006). Despite all students preferring to learn differently, experiential learning methods have received substantial interest from academics and educators (Brennan, 2014). Research of experiential learning methods have so far followed a particular pattern departing from Kolb's experiential learning theory (Kolb, 2014). While the concept of learning styles is criticized for grouping students in categories (Kirschner, 2017), individuals

have different nuances of all the learning styles rather than being imprisoned in just one. Manolis, Burns, Assudani, and Chinta (2013) tried to assess this issue by constructing a scale encompassing all different learning styles.

Although research has demonstrated the importance of implementing experiential learning (as a tool) by teachers, the relationship between the atmosphere in educational settings, such as classrooms and students learning style has been overlooked. The learning environment in educational settings, where students spend time listening, reading and watching presentations, should be adapted to the preferences of students and teachers (Baylor & Ritchie, 2002; Bitter & Pierson, 2001) to become meaningful (Nevison, Drewery, Pretti, & Cormier, 2017). The atmosphere in these environments can have either a positive (Ames, 1992; Barrett, Zhang, Moffat, & Kobbacy, 2013) or a negative impact on individuals. (Babisch, Fromme, Beyer, & Ising, 2001; Houtman, Douwes, Jong, Meeuwsen, Jongen, Brekelmans, Nieboer-Op de Weegh, Brouwer, Bossche, & Zwetsloot, 2008). Additionally, spatial theories demonstrate the apparent impact environments have on the concentration and health of people (Fisk, 2000; Lai, Mui, Wong, & Law, 2009), which also can impact on learning (Barrett et al., 2013).

Sensory cues, visual, auditory, olfactory and tactile, have in these environments been shown to raise levels of engagement, thus facilitating and enhancing the cognition, emotion, recall, judgements and learning of individuals (Atkinson & Shiffrin, 1968; Deliza & MacFie, 1996; Donovan & Rossiter, 1982; Fraser, 2015). Thus, it is crucial to consider classrooms when constructing an appropriate physical atmosphere for students to optimally engage their senses in (Shams & Seitz, 2008).

A vital alternative concept for learning in classrooms concerns whether students perceive classrooms as hedonic or utilitarian. These two concepts explain whether classrooms are experienced as functional (utilitarian) or as experiential (hedonic) (Voss, Spangenberg, & Grohmann, 2003). The concept of utilitarian and hedonic-oriented values has been absent in pedagogical literature, especially regarding classrooms, which is remarkable, since these constructs have shown to be of emotional and behavioral importance (Babin, Darden, & Griffin, 1994; Ballantine, Jack, & Parsons, 2010). Moreover, hedonic and utilitarian values and learning outcomes can be compared to the relationship between experience and learning as discussed in Kolb (2014).

Despite the fact that this study does not measure actual learning outcomes, the relationship is still important to highlight in order to understand why utilitarian and hedonic values are imperative for learning (see Kort, Reilly, & Picard, 2001; Pekrun, 1992). While research has clearly shown that environments have an impact on individuals' memory and emotions (Nevison et al., 2017), no pedagogical research has yet considered whether learning styles impact hedonic and utilitarian values of classrooms in higher education.

In similarity with learning styles, individuals have various preferences for hedonic and utilitarian values. Thus, it is expected that

learning styles have a positive relationship with hedonic and utilitarian values in classrooms. Understanding this becomes extremely important when designing classrooms, platforms or virtual settings, and can aid architects, interior designers, teachers in higher education to design more pleasant and learning-friendly atmospheres.

To address these issues, this study aims to examine how learning styles influence hedonic and utilitarian values of classrooms in higher education. This study contributes to higher education literature, showing how students' preferences of cues and learning impact their experiential perception of classrooms, subsequently argued to be of importance for learning outcomes. Architects, teachers, and managers can utilize the notion of expected hedonic and utilitarian values to combine, investigate and experiment further with learning outcomes.

THEORETICAL FRAMEORK

Students Learning Preferences

Felder and Silverman (1988, p. 674) define that learning styles, "[…] classify students according to where they fit on a number of scales pertaining to the ways they receive and process information". Kolb and Kolb (2005b) instead describe the individual learning preferences relevant to different phases in the learning cycle. In similarity with Keefe (1979) this paper considers learning styles as stable indicators of how students perceive, interact, and respond to the atmosphere in the educational setting. In summary, these definitions explain different learning preferences, leading to cognitive and affective responses in higher education (Gray, Peltier, & Schibrowsky, 2012) from the classroom design (Cheryan, Ziegler, Plaut, & Meltzoff, 2014).

Research shows that students who match their learning style to the environment, have better academic performance (Boyle, Duffy, & Dunleavy, 2003; Dunn, Griggs, Olson, Beasley, & Gorman, 1995). However, a mismatch between professors' and students' learning styles have shown to create bored and unmotivated students in environments (Felder & Silverman, 1988). Additionally, the incongruity between learning styles and language has been shown to cause problems in education and learning (Felder & Henriques, 1995). Therefore, it becomes important to match teaching methods in relation to the external environment to enhance the capabilities of students.

Learning styles have been a hot topic in the interdisciplinary and pedagogical literature during the last four decades, with many different types being discussed (Cassidy, 2004). Although criticism has been raised against learning style theory, as to simplifying matters (Cassidy, 2004; Curry, 1990; Loo, 2004; Reynolds, 1997), several inquiries have attempted to question the validity and reliability of them (Dunn et al., 1995; Felder & Spurlin, 2005; Holman, Pavlica, & Thorpe, 1997; Hopkins, 1993; Vince, 1998). While some support the validation of learning styles (Enns, 1993), others raise concerns (Pashler, McDaniel, Rohrer, & Bjork, 2008; Reynolds, 1997).

This paper employs the context of Kolb and Kolb's Experiential Learning Model (ELM) (Kolb & Kolb, 2005a) which is one of the most employed and considers four elements as a cycle of learning, where these four elements are two dimensional. Each of these should be present for comprehensive learning to take place; concrete experience (CE), reflective observation (RO), abstract conceptualization (AC) and active experimentation (AE) (Loo, 2004). These elements have been further modified in Manolis et al. (2013), which modified Kolb and Kolb's scale to a continuous one, covering three factors instead of four. Reflective observation & active experimentation concerns students observing teachers and then applying theories to make sense of the observations to solve a problem or make a decision. Concrete experience refers to students reinterpreting a previous experience or encountering a new situation. Lastly, abstract conceptualization concerns student reflection such as constructing new theories to explain prior observations (Kolb & Kolb, 2005b).

Within these three, four major learning styles are identified: accomodator, converger, diverger, and assimilator. Their properties are considered to have different strengths and weaknesses (Kolb & Kolb, 2005a; Manolis et al., 2013). The accommodator uses both concrete experience and active experimentation to enhance learning. The converger instead uses active experimentation and abstract conceptualization. The diverger uses concrete experimentation and reflective observation. Lastly, the assimilator uses abstract conceptualization and reflective observation (Kolb & Kolb, 2005b).

With regard to the learning styles of students, Kolb and Kolb (2005b) additionally discuss physical spaces where learning occurs. Although being part of a larger context, they define them also as learning spaces. These spaces should, for the best outcome, be compatible with the learning styles of the students. When dividing these spaces into cues, they should also be congruent with the preferences of individuals and each other (Barrett et al., 2013) to achieve positive outcomes for students (Parker, Myers, Higgins, Oddsson, Price, & Gould, 2009).

Hedonic and Utilitarian Values

Utilitarian and hedonic components of attitude and value have been discussed in various disciplines, such as psychology, economics, marketing, and sociology, where hedonic dimensions reflect sensation, and the utilitarian ones reflect functional properties (Voss et al., 2003).

More specifically, hedonic and utilitarian values refer to the two major dimensions of attitudes and values. Utilitarian values consider the functional and conscious traits that influence choices and actions in different situations. Hedonic values refer to their aesthetic, experiential, and enjoyment-related traits (Chitturi, Raghunathan, & Mahajan, 2008). Similarly, Batra and Ahtola (1991, p. 159) Batra and Ahtola (1991, p. 159) define these dimensions as, "(1) consummatory affective (hedonic)

gratification (from sensory attributes), and (2) instrumental, utilitarian reasons".

These concepts have been widely employed and examined in marketing and psychology literature (Babin et al., 1994; Ballantine et al., 2010; Chitturi et al., 2008; Dhar & Wertenbroch, 2000; Herz, Beland, & Hellerstein, 2004), and have also been shown to impact on teaching and learning when employed (Myers, 2010). While Cunningham (2016) mentions the blur between learning and consumption in higher education, hedonic and experiential motivations could likewise be argued to fit this notion. These values have been discussed by (Myers, 2010, p. 24) where she states: "Although the learning paradigm via experiential activities has a confirmed influence on classroom and learning outcomes". However, few studies have conceptually incorporated hedonic and utilitarian values in the domain of pedagogy.

Affective traits have in the literature been shown to have an impact on learning. This is shown in a study by (Craig, Graesser, Sullins, & Gholson, 2004), wherein emotional elements such as boredom and its antithesis, flow, seemed to have an impact on learning. Schools spend considerable effort in supporting utilitarian traits in classrooms for aiding the students' concentration, communication and memory (Amedeo & Dyck, 2003; Rosenfield, Lambert, & Black, 1985; Sommer, 1977). Hedonic elements consider instead how emotions can have an impact on motivation, learning strategies, cognitive resources and academic achievement (Pekrun, Goetz, Titz, & Perry, 2002).

Hypotheses Development

The components of learning styles vary in the literature (Cassidy, 2004) and this study employs the Kolb and Kolb (2005b) perspective. As this study recognizes the difficulties of force-choice methods, it employs a continuous scale (Manolis et al., 2013). Manolis et al. (2013, p. 51) further state, "The ability to accurately and efficiently assess student learning styles will allow educators to consider student learning styles when designing curricula and pedagogy. By doing so, educators may be able to increase the effectiveness of their instruction, particularly where experiential learning occurs". Consequently, this means that every student can score more or less on each learning style scale without being considered as a specific learner.

As hedonic values have shown to have an impact on teaching and learning when employed (Myers, 2010), it may influence how students prefer to learn. This suggests that learning styles have a positive relationship with the atmosphere in the educational setting regarding hedonic values, i.e., perceives the given setting as multisensory and emotional (Hirschman & Holbrook, 1982). Therefore, it is logical to assume that experimental learning styles are positively related to hedonic values. In particular, experiential and hedonic values have an impact on learning strategies, cognitive resources and academic achievement (Craig et al., 2004; Pekrun et al., 2002). Thus, it is

argued that the level of experimental learning styles component has a positive impact on hedonic values.

This falls into the following explorative hypotheses:

H_1: Learning style component, reflective observation & active experimentation, yield a positive relationship on hedonic values.

H_2: Learning style component, concrete experience, yields a positive relationship on hedonic values.

H_3: Learning style component, abstract conceptualization, yields a positive relationship on hedonic values.

In similarity with hedonic values, utilitarian values have been demonstrated to have an impact on teaching and learning (Myers, 2010) and this may subsequently influence student learning styles. This indicates that experiential learning styles have an impact on the atmosphere in an educational setting with utilitarian values regarded as being functional and effective (Voss et al., 2003). Specifically, because classrooms are designed with functional values to aid students' learning processes (Amedeo & Dyck, 2003; Rosenfield et al., 1985; Sommer, 1977). This suggests that there is a positive relationship between experimental learning styles and utilitarian values.

Thus, the following hypotheses are developed:

H_4: Learning style component, reflective observation & active experimentation, yield a positive relationship with utilitarian values.

H_5: Learning style component, concrete experience, yields a positive relationship on utilitarian values.

H_6: Learning style component, abstract conceptualization, yields a positive relationship on utilitarian values.

RESEARCH METHOD

Sample and Data Collection

To gather data across different education programs and faculties within universities, an anonymous cross-sectional online survey research design with convenience sampling was employed. This design was employed to investigate the relationship between experiential learning styles on utilitarian and hedonic values in classrooms.

To conduct this, a survey was sent out via email to Swedish students by the university mailing list to covering a wide variety of faculties. In order to access other universities, the description and the link to the survey were sent out to administrators and contacts at other universities. After evaluating the benefits and consequences of online surveys (Van Selm & Jankowski,

2006; Wright, 2005), they were additionally sent out to students via their university email and different university teaching platforms, such as Moodle and Canvas. Participants were required to be current or recent students, more specifically, up to a year after finishing the studies. This was a criterion for inclusion to ensure that they have been in classrooms recently and could relate to the inquired context. The survey was online for ten weeks and took approximately ten to fifteen minutes to complete.

A total amount of 310 (n) survey responses was gathered online over ten weeks, of which 270 (n) were fully complete. Five responses were missing or corrupt. The final number of complete survey answers was 265 (n), which was subsequently used in the analysis. In accordance with Hair, Black, Babin, and Anderson (2010) who suggest there should be a ratio of 40 respondents per independent variable (reflective observation & active experimentation, concrete experience, and abstract conceptualization), there are no sample size limitations in the current analysis.

Students included in the sample ranged from 18 to 30 years old. The average age of a student was approximately 26 years old with a standard deviation of 2 years. The majority of the students were female (approximately 76 %). Although the sample consisted of more females, the aim is not to compare gender in this study. In addition, it was checked for confounding effects (see Tables 2 & 3). The categories for academic programs were employed from the national government statistics bureau such as arts and humanities, business and administration, nature science, health and life science, social science, technology, teacher education and other.

Measures, Procedure, and Variables

This study employed an online survey consisting of 32 (n) questions, separated into three main sections, covering control variables, experiential learning styles, and utilitarian/hedonic values in classrooms. All questions were framed in the context of classrooms as in line with the purpose of the study. Moreover, the survey was constructed in the software *Survey and Report* and modified to fit students' language preferences and understanding. Following the recommendations of Fowler (1992), two pre-tests were employed to ensure the validity of the survey. Firstly, two researchers helped with the design of the scale, discussing the validity of questions and reverse coding. Secondly, ten students were asked to complete the survey and discuss uncertainties and difficulties. Once addressing all issues, the survey was sent out via email.

To measure the *hedonic and utilitarian values* of students, this study employed a modified scale of 10 questions from (Voss et al., 2003). The scale is widely utilized in research (e.g., Chitturi et al., 2008; Okada, 2005) and consists of 10 semantic items measuring five hedonic and five utilitarian values with a 7-point Likert scale. This study modified the scale to correspond with the context of classrooms, hence representing hedonic and utilitarian values and attitudes students have towards higher education classrooms.

In developing measures for investigating experiential learning styles, forced-choice questions, as frequently used in LSI, were avoided as to the critique in the literature (Manolis et al., 2013), meaning that individuals can have different degrees of different learning styles and hence are more complex. To address this issue, a continuous RLSI (reduced learning style index) scale was adopted from Manolis et al. (2013) that converted Kolb and Kolb's learning styles into three continuous factors, thus allowing complementary analyses. The scale consists of 17 items, representing three major factors. One of them is reflective observation and active experimentation (ROAE), which load on the same factor, the second one is (CE) concrete experience, and the last one (AC) is abstract conceptualization. The degree of these factors was gathered with a 7-point Likert scale, where 1 is, do not agree at all, and 7 agree completely. These measures were above the tolerable explorative threshold of alpha= .60 (DeVellis, 2016).

The hypotheses of this study were tested with two separate hierarchical multiple regressions (Cohen, 1988), each one investigating the relationship between learning styles and either hedonic or utilitarian values. This to test if various learning styles have an impact on individual level and when all were present in a full model.

Before performing the hierarchical multiple regression analyses, preliminary analyses were conducted to exclude violation of normality, linearity, and homoscedasticity. Table 1 shows the correlation between variables.

Table 1: Descriptive statistics and Pearson correlation coefficients (N=265)

Variable	*Mean*	*SD*	*1*	*2*	*3*	*4*	*5*
1. ROAE	5,157	0,793	1,000	0,302**	0,385**	0,095	0,089
2. CE	4,534	0,980		1,000	0,582**	0,234**	0,250**
3. AC	4,981	0,950			1,000	0,329**	0,392**
4. Hedonic	3,574	0,964				1,000	0,488**
5. Utilitarian	4,415	0,966					1,000

*Notes: *p < 0.05; **p < 0.01; two-tailed tests*

The mean values of variables are between 3.574 and 5.157, and have a standard deviation between 0.793 and 0.980. In addition, the majority of the correlations between variables were significant ($p<0.05$). In accordance with (Cohen, 1988) rule of thumb, small, medium, and large strengths between variables were obtained. This suggests that there are no major issues of multi-collinearity between variables.

Aside from the correlation between variables, diagnostic tests were performed to ensure the robustness and validity of the hierarchical multiple regressions. Initial assumptions of outliers and linearity were checked by examining scatterplots and Cook's distance. No apparent case of extreme outliers was identified, suggesting linear models. Moreover, autocorrelation,

homoscedasticity, multicollinearity, and normality were examined. It was found that the residuals have a normal distribution. In addition, VIF values ranged between VIF 1.012 and 1.667. The obtained values are within Hair et al. (2010) rule of thumb 1 to 3. These results suggest no multi-collinearity in the models.

Moreover, a validity test of common method variance was performed (Chang, van Witteloostuijn, & Eden, 2010; Jarvis, Mackenzie, Podsakoff, Mick, & Bearden, 2003; Podsakoff & Organ, 1986). Harman's single factor test was performed where the first factor accounts for 46 percent of the variance. These results are in line with Lindell and Whitney (2001) guideline with variance below 50 percent of the first variable. However, one test is not sufficient for ensuring validity (Chang et al., 2010; Jarvis et al., 2003; Podsakoff & Organ, 1986). Therefore, a partial correlation test with a marker variable was performed (Williams, Hartman, & Cavazotte, 2010). Results show no significant difference ($\leq$0.003) compared with originally obtained correlations. It indicates that the data does not suffer from common method variance issues.

RESULTS

The Relationship between Learning Styles and Hedonic Values

A hierarchical multiple regression analysis was performed to test and examine the relationship between learning styles and hedonic values (H_1, H_2, and H_3). Initially, independent variables of learning styles were respectively tested with the dependent variable hedonic values. Thereafter, independent variables were tested simultaneously with the dependent variable. Results from the performed hierarchical multiple regression are shown in Table 2.

Model 1 in Table 2, the baseline model accounts for 1.8 percent of the variance in hedonic values. When learning styles were entered respectively in Models 2, 3, and 4 and simultaneously in Model 5 the variance increased in each model. Models 2, 3, 4, and 5 account for 2.9; 12.1; 7,1; and 12.5 percent of the variance in hedonic values. Moreover, F-scores (Model 1: F=1.214; Model 2: F=2.963; Model 3: F=30.350; Model 4: F=14.712; and Model 5: F=10.541) where significant in all models besides Model 1 with hedonic values.

The baseline model shows the effect of included control variables on hedonic values. In Models 2, 3, and 4 we examine the effects of learning styles on hedonic values, by respectively entering the independent variables in the baseline model. Model 5 shows the full model, which examines the effect of learning styles on hedonic values by entering independent variables simultaneously.

In H_1, it was predicted that reflective observation & active experimentation have a positive relationship with hedonic values. Models 2 and 5 show no support for H_1. Thus, *H_1 is rejected*. In H_2, it was predicted that concrete experience has a positive impact on hedonic values. Models 3 and 5 provide evidence that concrete experience positively influences hedonic

values. The coefficients are positive and statistically significant in the models ($p<0.001$). Hence, *H_2 is accepted*. In H_3, it was predicted that abstract conceptualization has a positive effect on hedonic values. Although Model 4 shows support for H_3, the final model (Model 5) provides no support for the predicted relationship. Therefore, H_3 is rejected or partly supported.

Table 2: Hierarchical multiple regression the relationship between learning styles and hedonic values

Independent variables	*Expected directions*	*1*	*2*	*3*	*4*	*5*
Control variables						
Gender		0,014	0,004	0,044	0,008	0,043
		(0,122)	(0,122)	(0,016)	(0,119)	(0,017)
Age		-0,002	-0,003	-0,004	-0,008	-0,005
		(0,018)	(0,017)	(0,017)	(0,017)	(0,117)
Education		-0,006	-0,005	-0,007	-0,007	-0,007
		(0,007)	(0,007)	(0,007)	(0,007)	(0,007)
Students in the classroom		-0,073*	-0,078*	-0,057?	-0,066*	-0,055?
		(0,034)	(0,034)	(0,032)	(0,033)	(0,032)
Hypotheses variables						
H_1: ROAE	+		0,129?			-0,042
			(0,075)			(0,078)
H_2: CE	+			0,328***		0,301***
				(0,060)		(0,076)
H_3: AC	+				0,228***	0,068
					(0,060)	(0,072)
F:		1,214	2,963?	30,350***	14,712***	10,451***
Adj-R^2		0,003	0,011	0,104	0,053	0,101
R^2		0,018	0,029	0,121	0,071	0,125
Change in R^2			0,011	0,103	0,053	0,107

*Notes: H_1 to H_3 indicate hypotheses. ?p < 0,10; *p < 0,05; **p < 0,01; ***p < 0,001. Values are unstandardized beta coefficients. S.E. (standard error) is presented within parenthesis immediately below the unstandardized beta values for each of the independent variables, respectively.*
Dependent variable: Hedonic values.

The Relationship between Learning Styles and Utilitarian Values

The relationships between learning styles and utilitarian values were tested with a hierarchical multiple regression analysis. Identical with testing H_1, H_2, and H_3, independent variables of learning styles were tested respectively with the dependent variable utilitarian values (H_4, H_5, and H_6). Thereafter, independent variables were tested simultaneously towards the dependent variable. Results from the performed hierarchical multiple regression are shown in Table 3.

Model 1 in Table 3, the baseline model accounts for 3.2 percent of the variance in utilitarian values. When learning styles were entered respectively in Models 2, 3, and 4 and simultaneously in Model 5, the variance increased in each model. Models 2, 3, 4, and 5 account for 4.2; 18.8; 10.1; and 19.4 percent of the variance in utilitarian values. Moreover, F-scores (Model 1: F=2.148; Model 2: F=2.657; Model 3: F=49.7963; Model 4: F=19.736; and Model 5: F=17.275) where significant Model 3, 4, and 5 in utilitarian values.

Table 3: Hierarchical multiple regression the relationship between learning styles and utilitarian values

Independent variables	*Expected directions*	*1*	*2*	*3*	*4*	*5*
Control variables						
Gender		-0,147	-0,157	-0,027	-0,155	-0,106
		(0,122)	(0,121)	(0,016)	(0,118)	(0,112)
Age		-0,024	-0,026	-0,111?	-0,031?	-0,027
		(0,017)	(0,017)	(0,112)	(0,017)	(0,016)
Education		0,013?	0,013?	0,012?	0,011	0,011
		(0,007)	(0,007)	(0,007)	(0,007)	(0,007)
Students in the classroom		0,036	0,032	0,055?	0,044	0,060
		(0,034)	(0,034)	(0,031)	(0,033)	(0,031)
Hypotheses variables						
H_4: ROAE	+		0,122			-0,094
			(0,075)			(0,075)
H_5: CE	+			0,404***		0,402***
				(0,057)		(0,074)
H_6: AC	+				0,261	0,057
					(0,059)	(0,069)
F:		2,148?	2,657	49,796***	19,736***	17,275***
Adj-R^2		0,017	0,023	0,172	0,083	0,172
R^2		0,032	0,042	0,188	0,101	0,194
Change in R^2		0,032	0,010	0,156	0,069	0,162

*Notes: H_4 to H_6 indicate hypotheses. ?p < 0,10; *p < 0,05; **p < 0,01; ***p < 0,001. Values are unstandardized beta coefficients. S.E. (standard error) is presented within parenthesis immediately below the unstandardized beta values for each of the independent variables, respectively.*
Dependent variable: Utilitarian values.

The baseline model shows the effect of included control variables on hedonic values. In Models 2, 3, and 4 we examine the relationship between learning styles on utilitarian values, by respectively entering the independent variables in the baseline model. Model 5 shows the full model, which examines the effect of learning styles on utilitarian values by entering independent variables simultaneously.

In H_4, it was predicted that reflective observation & active experimentation are positively related to utilitarian values. Models 2 and 5 provide no support for the predicted relationship. Hence, H_4 is rejected. In H_5, it was predicted that concrete experience has a positive relationship with utilitarian values. Results from Models 3 and 4 show support for H_5. Thus, H_5 is accepted. In H_6, it was predicted that abstract conceptualization has a positive impact on utilitarian values. Models 4 and 5 provide no evidence of the predicted relationship. Therefore, H_6 is rejected.

DISCUSSION

The study shows interesting relationships between the concrete experience learning style with hedonic and utilitarian values. Results show that students who score higher on the concrete experience scale also have higher hedonic and utilitarian values of classrooms, which are suggested to impact learning outcomes (Boyle et al., 2003).

By accepting H_2, the result implies that students with concrete experience as a learning style are positively related with teaching and classrooms designed to be fun, exciting, and pleasurable.

Results show that abstract conceptualization has no impact on hedonic values. It indicates that students who reflect and process information in the classroom (Kolb & Kolb, 2005b) do not perceive the learning to be hedonic. Even though abstract conceptualization does not have a positive relationship with hedonic and utilitarian values, it does not show a negative relationship. This is important, as modifying a classroom to satisfy students with a high score on concrete experience does not conflict with students that score high on 'abstract conceptualization'. In other words, it strengthens the notion that students have more than one learning style, rather than being a dichotomous concept (Manolis et al., 2013). It may be of importance to identify students that score higher on this scale to design more stimulating classrooms.

Moreover, it is also demonstrated that concrete experience has a positive effect on utilitarian values. By accepting H_5 that students with a concrete experience as a learning style are positively related to effectiveness, functionality, necessity, and practicality in teaching or classrooms.

Although only H_2 and H_5 are accepted, the results are interesting from an experiential learning theory point of view. The results demonstrate that only concrete experience has an impact on both hedonic and utilitarian values. This is in accordance with Kolb and Kolb (2005b) notion of emotional and experiential traits of concrete experience signifying that concrete experience-skewed students tend to have an impact on hedonic and utilitarian values. The results suggest that these students are more sensitive to perceiving hedonic and utilitarian values, and this may subsequently have an impact on their learning. Thus, the findings demonstrate that concrete experience-oriented students have a positive impact on hedonic values such as fun, excitement,

and pleasure, as well as utilitarian values such as effectiveness, functionality, necessity, and practicality in classrooms.

Based on the results and the discussion, this study suggests that classrooms could be constructed in relation to hedonic and utilitarian attributes. It would improve the learning environment leading to the enhancement of students' learning styles, in particular, accommodators and diverges (learning styles) who score higher on the concrete experience scale. Following this logic, students would become more receptive to formation of a supportive learning environment corresponding to expectations of hedonic and utilitarian values in classrooms (Kim, Seitz, & Shams, 2008; Von Kriegstein & Giraud, 2006). It indicates that classrooms should be designed with stimulating and practical interiors, for example with whiteboard, projector, desks, and chairs, and this will unconsciously have a positive impact on student learning in accordance with active learning classrooms (Walker & Baepler, 2017). Hence, it is imperative that students perceive classrooms as hedonic and utilitarian since this has a positive impact on their learning.

As mentioned previously, considering the critique of generalizing students to belong to specific learning styles (Curry, 1990; Loo, 2004; Manolis et al., 2013; Reynolds, 1997), the remainder of students are in this study not overlooked. It should be duly noted that students have various levels of experiential learning styles, but this study demonstrated that concrete experience leaves an imprint on hedonic and utilitarian values.

In regard to creating hedonic classrooms, multisensory design could be a solution. For example, Shams and Seitz (2008, p. 1) state, “We suggest that training protocols that employ unisensory stimulus regimes do not engage multisensory learning mechanisms”. Hence, involving multiple senses is, therefore, more beneficial than using only one sense when it comes to student learning. This is linked to Kolb and Kolb's Experiential Learning Model (Kolb & Kolb, 2005a) since students interpret the classroom environment and learn by obtained sensory information.

Although there has been a trend in research that has shifted focus from classrooms to the learning environments of individuals and groups (Gibbs, 2013), there is no doubt that students still spend much of their time learning in classrooms. However, classrooms are still relevant to be constructed and modified to facilitate learning (Cheryan et al., 2014). Following this logic, this study demonstrates the importance of having hedonic and utilitarian attributes to positively impact on student learning in classrooms. Even if the development is moving towards students working individually or in groups much teaching still takes place in the physical classroom. For example, a case can be presented in the classroom that students solve individually or in groups. Therefore, it is logical to assume that the hedonic and utilitarian attributes in the classroom serve as the foundation to influence student learning, which they later can develop through individual or group work.

CONCLUSIONS

This study examined the relationships between (Kolb & Kolb, 2005b) learning styles and hedonic and utilitarian values of classrooms in higher education. It is found that the learning style component, concrete experience, has a positive impact on both hedonic and utilitarian values held by students. The findings demonstrate the importance of considering both hedonic and utilitarian values (Voss et al., 2003) when designing classrooms to satisfy student expectations, and this may subsequently have an impact on learning outcomes (Myers, 2010). All students, to some extent, have concrete experience, and those who score higher on this scale find learning environments such as classrooms to be more important for their learning. As Cheryan et al. (2014) state, many classrooms have inadequate structural facilities and the physical properties within them have value for maximizing student achievements. Similarly, this research provides theory and gives practitioners a better understanding that not all individuals are equally affected by hedonic and utilitarian classrooms. In regard to this, it can be concluded that students' knowledge derives from their experience, reflection and thoughts (Kolb & Kolb, 2005b) of hedonic and utilitarian attributes in the classroom. Hence, all students experience the classroom, but they have different levels to make sense of the hedonic and utilitarian attributes, i.e., concrete experience.

This study contributes to the pedagogic literature regarding the relationship between learning styles and hedonic and utilitarian values in classrooms. Teachers may utilize this notion by first understanding hedonic and utilitarian stimuli in the environment in the classroom, for example, presentations, speeches, and case studies should be aligned with student's learning styles in the given setting to generate more engaged and motivated students (Boyle et al., 2003; Cheryan et al., 2014). This study also provides an important opportunity to advance the understanding of the potential positive outcomes active learning classrooms provide (Walker & Baepler, 2017). Although the teachers in higher education are not fully responsible for designing classrooms, they can still influence the physical environment through practical experiential tools. For example, by using various hands-on-tools, laboratory work, multimedia equipment such as digital boards for engaging students, by writing or making interactive videos, or even tools such as Mentimeter or Kahoot, will allow students to interact through smartphones or tablets with the educator. Hence, teachers can constantly adjust their presentations in line with what is offered in the physical classroom to satisfy concrete experience-oriented students. This study suggests that although teachers in the realm of higher education share classrooms and have little to say about the design, they are encouraged to take more care in managing the physical classroom environment.

LIMITATIONS AND FUTURE RESEARCH

Learning outcomes have not been examined or tested in this study, and should in future studies be investigated with surveys and experimental design. Moreover, further research needs to be conducted to establish whether the match between utilitarian/hedonic-oriented classrooms can mediate cognitive functioning or learning.

The intention of this study was not to examine, test, and compare various classrooms. It would be interesting to examine physical and virtual classrooms to identify a suitable design regarding learning styles and hedonic/utilitarian values. This leaves the following questions unanswered, to what extent and how adaptable students are with various learning styles in different classroom settings. Future research is encouraged to explore student preferences of hedonic and utilitarian values in the atmosphere with qualitative interviews to understand how various levels of experiential learning styles influence different classroom settings.

Although this study has a sample representing students from a broad range of education programs, a limitation may be the scope of Swedish universities. Further research is encouraged to examine and test this study's hypothesized relationships in other countries. This may provide insights of similarities and differences of how classrooms are designed in higher education and how it influences students learning.

In summary, this paper has demonstrated the importance of hedonic and utilitarian attributes in classrooms to impact student learning positively. However, future research is suggested to examine different higher education program fields or disciplines more closely, since it may be the case that a classroom in business administration, compared with engineering, is designed differently to facilitate and impact that particular student group.

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Manuscript submitted: ***March 19, 2018***
Manuscript revised: ***October 21, 2018***
Accepted for publication: ***November 21, 2018***

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 19-33
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1867898
© ISSN: 2166-2681

ASEAN University Network in Enhancing Student Mobility: A Case of Indonesia

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ABSTRACT

Internationalization of higher education pushes for more intensive regional collaborations as well as student mobility. There are a plethora of studies exploring student mobility patterns, but research on the transformative potential of regional mobility networks is limited. As the most predominant regional network of universities in Southeast Asia, ASEAN (Association of South East Asian Nations) University Network (AUN) commits to boosting student mobility in the region, and thus, can be conceived to be a deliberative space capable of expanding student mobility. This paper examines the role of AUN in promoting student mobility within the ASEAN region. Indonesia's engagement is used as a point of entry to assess the extent of policies and programs in encouraging student mobility in the ASEAN region.

Keywords: ASEAN University Network (AUN), Indonesia, internationalization, regionalization, student mobility

Recent trends in the internationalization of higher education in South East Asia show an advancement of cooperation among countries, reflecting the globalization of higher education which involves an increasing movement of people, culture, ideas, values, knowledge, technology, and economy (Knight, 2008, Kuroda, 2016). Globalization itself constitutes "the economic, political and societal forces pushing universities toward greater international involvement" (Altbach & Knight, 2007, p. 291). One aspect of this involvement means increased mobility of students, which in the case of ASEAN (Association of South East Asian Nations) changed from 166,000 in 2009 to 220,000 in 2013 (SHARE, 2016, p.1).

The ASEAN representing an early regionalization body in the South East Asian region established ASEAN Universities Network (AUN) in 1995

to promote regional cooperation on four areas: student and faculty exchanges, ASEAN studies, information networking, and collaborative research (AUN, 2012). The creation of AUN seems to evolve under strategies of larger organizations such as SEAMEO-RIHED (Southeast Asian Ministers of Education Organization- Regional Institute for Higher Education and Development), established by UNESCO (United Nations Educations, Scientific and Cultural Organization), which aim to create harmonization of higher education in the region (Kuroda, 2016). With regard to student mobility, recent data show a significant number of ASEAN students studying in neighboring countries (British Council, 2008; Hou, Hill, Chen & Chen, 2017). According to UNESCO, 23,000 ASEAN students studied in China in 2013 (Hou, Hill, Chen & Chen, 2017, p. 13). Moreover, student mobility across universities within ASEAN countries in 2013 was 20,540, which represented 9 percent of 220,000 ASEAN students who studied in non-ASEAN countries (SHARE, 2016, p. 1).

Indeed, the presence of student mobility across ASEAN countries indicates the emerging of higher education regionalization, which refers to "the process of intentionally building connections and relationships among higher education actors and systems in a region" (Knight, 2016, p. 114). Knight (2016) sees regionalization of higher education as a continuing process, representing a dynamic of university development and other related institutions in response to the impact of globalization, which are also regarded as the players of regionalization within a region. In this case, AUN represents the key player since it was purposely established as a network to facilitate collaborations among leading universities in ASEAN countries to achieve the mission and vision of ASEAN in establishing common space for higher education (AUN, 2012). The AUN member universities, including the ones in Indonesia, also constitute the players as they are obliged to adhere to AUN's policy. Other universities outside AUN but within ASEAN country members' higher education system are welcome to participate in promoting student mobility across ASEAN region. In this light, this paper aims to examine the potential of AUN in promoting student mobility, which is focused on mobility of exchange students as AUN is established in particular to promote student exchange besides staff exchange (AUN, 2012). This paper highlights two questions: How does the AUN play its role in promoting student exchange mobility? Next, how do Indonesian universities able to keep up with AUN's policy and regulation on student exchange mobility?

Furthermore, studies on regional credit mobility, such as ERASMUS (European Region Action Scheme for the Mobility of University Students) and AIMS (The ASEAN International Mobility for Students) report on barriers to student mobility programs, including issues related to national contexts (Zmas, 2015), compatibility of higher education systems (Vossensteyn et al., 2010) and credit transfer (King et al., 2011; Junor & Usher, 2008; Richardson, 2015; Richardson & Radloff, 2014). In this regard, this paper focuses on policies and programs on credit transfer and quality

assurance set up by AUN. Likewise, policies and programs on credit transfer and quality assurance in Indonesian higher education system are presented to explore AUN's efforts in regionalizing the region through student exchange mobility. Examination through regionalization perspective highlights the importance of all players to participate to promote student mobility as the regional goal mentioned in ASEAN Declaration and Charter. However, Indonesian case shows that capacity to participate in promoting student exchange mobility is crucial as it is shaped by both university and higher education system of individual ASEAN country member.

Overall, this paper comprises four sections. The purpose and organization of AUN with regard to student mobility in the following section aims to provide background information on the emerging collaboration on student exchange, which rooted in the main objective of AUN. The following section about policies and programs on student mobility within Indonesian higher education system gives an illustration of student exchange in Indonesia as a member country of AUN. These sections, indeed, show the emerging phenomenon of regionalization in ASEAN region. In particular, relationships within the student mobility network are examined through the practices of AUN quality assurance framework and ASEAN credit transfer system. Hence, this paper reveals how far student mobility through exchange programs has been promoted through AUN network system. The use of Indonesian's case as an entry point to explore regionalization through student exchange mobility demonstrates the necessity of the development of all higher education system within the region. Thus, regionalization faces challenges if nation members did not have compatible system due to an immature system in order to collaborate equally in the region.

AUN AND STUDENT EXCHANGE MOBILITY

For ASEAN, which represents an inter-governmental organization, education serves as a vehicle to achieve various goals, such as to build competitiveness and develop ASEAN's identity through awareness of history, language, culture and common values (ASEAN, 2014). Moreover, ASEAN Declaration and Charter emphasis the utmost of collaboration in the region. Via AUN, which was established in 1995, ASEAN aims to promote human resource development through higher education (AUN, 2011). Hence, AUN targets to 1) promote cooperation among ASEAN scholars, academicians, and scientists, 2) develop academic and professional human resource, 3) promote dissemination of information, and 4) enhance the awareness of regional identity and the sense of 'ASEANness' among members (ASEAN, 2015). Clearly, the objectives of AUN cover broad areas to promote collaboration among its university members, hence, student mobility is only an avenue to achieve its goals.

The extent of higher education in ASEAN region is reflected in the total number of higher education institutions in ASEAN countries, which its total is around 7000 universities. In detail, the number of universities in 11

country members are varied: Brunei - 4 (2008), Cambodia – 105 (2014), Indonesia - 3800 (2014), Laos - 45 (2010), Malaysia - 488 (2010), Myanmar – 169 (2014), Philippines - 2299 (2013), Singapore - 19 by 2010), Thailand (141 by 2013), Timor-Leste (3 by 2012), and Vietnam (376 by 2009) (SEAMEO-RIHED, 2014; Dhiratithi, 2017, p. 6). In contrast, AUN had only 30 university members (AUN, 2012), 2015). Hence, students participating in the AUN student exchange comes from small fractions of the total student in ASEAN region. Moreover, to promote collaboration with non-AUN university members across the ASEAN region, AUN has established several platforms, including Engineering, Business and Economics, Intellectual Property, Inter-Library Cooperation and Human Rights and Social Responsibility and Sustainability (AUN, 2011, p. 12). It shows how AUN has played its role as a regional institution involving various programs in order to achieve its objectives.

Through student mobility programs, AUN aims specifically "1) to provide and promote the increased sense of ASEAN (and Asian) identity to young ASEAN/Asian people, through contacts with each other, i.e. connectivity, and, 2) to prepare these young people for the future migratory careers, through their study and stay in other countries, i.e. from ‘study mobility' to ‘career mobility' (Dhirathiti, 2017). In brief, AUN administered five clusters of student mobility programs with total number of student participants in each cluster during 1996 – 2016, as follows: Youth (1932), Alumni Events (199), Study Visit in ASEAN (63), Study Abroad to China, Japan and Korea (687), various scholarships (1163), and ACTS (ASEAN Credit Transfer System) scheme (825) (Dhirathiti, 2017, p. 53). With regard to student exchange mobility through ACTS scheme, 12 of 30 AUN member universities provide a scholarship for exchange programs (SHARE, 2016, p.11). It was reported that 577 students participated in the programs during 2011-2015 (SHARE, 2016, p. 13).

INDONESIAN HIGHER EDUCATION ON STUDENT MOBILITY

Amongst ASEAN member countries, Indonesia is the largest economy in the region and has the fourth largest education system in the world after China, India and the USA (Logli, 2016). Provision of higher education is managed by the Ministry of Research and Technology and Higher Education (MoRTHE) through the Directorate General of Higher Education (DGHE) and other ministries such as the Ministry of Religious Affairs and the Ministry of Finance. Mostly shaped by the Anglo Saxon model, Indonesian Higher Education system consists of 98 public and 3353 private institutions, 52 Islamic institutions and 1 Open University with a total number of students were around 54 million (Moeliodihardjo, 2014, p. 1). In 2011, the gross enrolment rate in tertiary education, which was 27.1 percent, was the highest Among ASEAN member states (ASEAN, 2014). Having a large number of

students suggests Indonesia has potential to participate in student exchange programs, however, only four public universities in Indonesia are the member of AUN. Recent data from UNESCO on student mobility, in general, showed that Indonesian students who studied abroad were 39,098, but there were only 6579 Indonesian students who studied in ASIAN countries in 2013 (SHARE, 2016, p. 1). With regard to mobility within ASEAN, the majority of Indonesian students went to Malaysia (6222), Thailand (323) and Brunei (34), while majority of International students in Indonesia came from Malaysia (2516), Thailand (57), and Vietnam (50) (SHARE, 2016, p.2).

Indonesian government support for international collaborations including on student mobility to improve human quality is reflected in 'Indonesian Law No 12, 2012 article 38' and the 'Decree of Ministry of Education and Culture No 14, 2014 article 7' encompassing regulations on practices and collaborations on teaching, research and community services of university (Santoso, 2014, p. 5). Student mobility programs in Indonesia are classified according to 1) qualification (degree or credit), 2) region (national, regional and internationalization), 3) financial source (university, government, and private sponsorship), 4) activity (lecture, internship, research, and fieldtrip), and length of program (one semester or less, such as field trip, short course and exchange student, and more than one semester, such as sandwich program and double degree/ joint degree) (Santoso, 2014, pp. 6-7). It shows there are various student mobility programs apart from student exchange mobility through AUN. In order to understand the collaborations between universities in Indonesia with those overseas through AUN student exchange mobility, the following sections discuss the practices of credit transfer and quality assurance systems in the ASEAN region through regionalization stance.

AUN QUALITY ASSURANCE

The AUN initiated Quality Assurance Framework in 1998 with primary aims to develop a Quality Assurance system and mechanism to enhance higher education standard not only among member universities but also its associate members. AUN-QA quality assessment at program level as the main activity commenced in 2007. Since 2011, AUN-QA has extended its assessment to reach out non-member universities in the region aiming to maximize its benefits for whole regional communities in particular Cambodia, Lao PDR, and Myanmar. Until recently, AUN-QA conducted the assessment on the quality of 122 study programs from 26 universities (including AUN-QA Associate Members and non-AUN Members) in 8 ASEAN countries using AUN Criteria (AUN-QA, 2015, p. 4). In this regard, drives for AUN-QA member universities to participate in the process include not only a political obligation as a member but also an awareness to improve quality of higher education.

The urgency for certification is heightened as just recently the AUN-QA Framework is implemented with the objectives "to support the ASEAN

Economic Community (AEC) and to promote cross-border mobility for students and faculty members and internationalization of higher education" (AUN, 2016, p. 5). Thus, participation in ASEAN community through student mobility demands university to have AUN certification. According to the Guide of QA (AUN, 2016), the Framework comprises quality assessment both at study program and institutional levels and is aligned with the ASEAN Quality Assurance Framework (AQAF), Standards and Guidelines for Quality Assurance in the European Higher Education Area and Baldrige Performance Excellence Framework. As it reflects an extended potential collaboration, it may raise the necessity of gaining AUN-QA certification amongst universities.

Indeed, Indonesian higher education established its own quality assurance system in 1998 with aims to safeguard the quality of higher education by accrediting study programs and institutions (Wicaksono & Friawan, 2011). As a mandatory, accreditation is conducted by *BAN-PT – Badan Akreditasi Nasional-Perguruan Tinggi* (National Accreditation Agency for Higher Education). Recent data shows that in 2016, among 4512 higher education institutions across the nation, the number of accredited institutions was only 23 percent with the majority of institutions (68%) falls under C grade while from the total of 24,638 study programs the accredited programs was 69 percent with the majority of programs (47%) received B grade (MoRTHE, 2016, p. 45). Moreover, as the 2015-2019 Higher Education Strategic Plan mentioned about the objective for higher education institutions to develop nation's competitiveness, universities are encouraged to collaborate with overseas institutions such as through student mobility (i.e. twinning or sandwich programs), thus quality assurance through accreditation by BAN-PT becomes crucial. With regard to preparation toward ASEAN Community, Indonesian government endorses universities to get certification from AUN-QA in order to be able to collaborate with universities in the region. In this regards universities give a positive response about getting certification from AUN. Take, for example, *Universitas Hasanudin* (an AUN-QA associate member university) formed two task forces at university level involving with institution and study program assessments. The first task force provided capacity building seminar for the second one to equip the assessors with knowledge and skills on assessing study program using AUN-QA criteria. In addition, other universities who received A Grade from BAN-PT are enthusiastic to pursue certification from AUN-QA.

The description of both quality assurance system of AUN and Indonesia shows the phenomenon of 'multilevel governance' (Wessel & Wouters, 2008, p. 4). Firstly, governance at national level involves with day to day practice within higher education system with regards to safeguarding the quality of higher education that government demands universities to get accreditation from BAN-PT, whilst secondly, regional governance is reflected in the requirement of additional AUN-QA certification for universities to participate in promoting student mobility. In this regard, the

application of AUN-QA regulations increases normative processes in a nation which impacts day to day activities. Moreover, the concept of multilevel governance has two elements, which are 1) ‘governance without government', which is about AUN who is not a government but has the mandate to govern QA across universities in the region, and 2) ‘governance beyond the state', which is about management of QA by AUN as a regional institution (Wessel & Wouters, 2008, p.4).

As mentioned by Knight (2016), different rationales or objectives behind regionalization are possible to co-exist. In this case, AUN role in promoting student mobility in ASEAN region are supported by different interests of key players. Apart from its individual context, a university is shaped by government' policies in determining its objective to participate. For a university, focus on improving quality of higher education is essential business since accreditation by BAN-PT since 1998. For the government, its policies emphasizing on building national competitiveness drives universities to develop their global performance which is measured by university ranking (MoRTHE, 2016). For AUN, as the implementing agency of ASEAN in regionalization, its main objective is to enhance collaborations among universities in the region through the application of AUN-QA.

The overall discussion shows that AUN plays a significant role in promoting student mobility through the implementation of AUN-QA Framework. For Shield (2016), AUN through how it assumes government role of accrediting higher education quality demonstrates its position as the key actor in the globalization of higher education in ASEAN region. The development of regional quality assurance network by AUN through operation of AUN-QA among its member and associate member universities reflects what Kuroda (2016) described AUN’s role in regionalization: to facilitate and promote the increasing interdependence and collaboration in the region. Furthermore, the role of AUN is reflected in university staff’ perceptions of the importance of AUN-QA as follows 1) Certification is conducted using AUN criteria, 2) AUN-QA set the criteria internationally, 3) Certification aims to make education system are comparable in ASEAN region, and 4) Certification aims to ease credit transfer within the region.

Indeed, the important role of AUN may be meaningless in the reality due to many factors. In line with Verge and Hermo (2010) that resources can be a barrier in higher education regionalization, a rector from an associate member university in Indonesia reported that his university managed to get AUN-QA certification only for several study programs as it was expensive to get and maintain the AUN certification. Moreover, drawing on Neubauer (2012), who described the effects of centrifugal and centripetal forces on higher education regionalization, issues of the cost associated with AUN-QA certification might become the centrifugal force that keeps university away from participating in collaboration through AUN’s student mobility program.

Hence, the growth of student mobility through exchange scheme in the ASEAN region is shaped not only by policies/ regulations set by AUN-QA but also the Indonesian regulation on higher education quality assurance

system as well as individual university situation (e.g. university's policy and financial capacity).

ASEAN CREDIT TRANSFER SYSTEM (ACTS)

The role of AUN in promoting credit mobility is reflected in its policies and programs aiming to support student mobility while undertaking a degree through programs such as student exchange or study abroad. AUN, as the implementing agency of ASEAN for higher education cooperation, has an obligation to address the mission of ASEAN in promoting higher education development in the region. In this context, to promote credit mobility AUN has set up and managed a credit transfer system (ACTS) for its member universities in the region (SHARE, 2016). As a member of AUN, the Indonesian government and the four-member universities are bound to participate in accomplishing the ASEAN vision mission to move toward ASEAN community in 2020 (AUN, 2016). In this context, the operation of the ACTS requires implementation of QA assessment across member universities in the region since credit gain from a study at another country can be recognized only when it is recognized and comparable, which means it is assessed using the same QA system.

AUN established ACTS, a common credit transfer mechanism, comprising grading scales, an online list of available courses and online application system with a goal to promote student mobility in ASEAN region. This system was proposed at the 9th AUN-QA workshop in 2008 and after going through several meetings the ACTS Steering Committee endorsed the ACTS implementation among AUN member universities commencing in 2011 with Universitas Indonesia to host its secretariat. The ACTS secretariat's role is to develop the ACTS online system and monitor student mobility under this scheme. This credit transfer system takes into account existing institutional or national credit systems when conversing credits, study periods and learning outcomes. The ACTS is applicable for student mobility through the AUN-ACTS Study Awards and AUN Member Universities Scholarship. The second program – Scholarship from AUN member universities is a commitment toward AUN which enhance student participation in the mobility program where AUN member universities must provide 10 scholarships a year. It shows the ACTS facilitate student exchange by reducing barriers such as differences in curriculum, education system, credit transfer, and funding. In 2012 one year after implementation of ACTS, the ACTS steering committee conducted program evaluation and identified that there were 200 applications for the first year of the program. The next agenda for the ACTS steering committee meeting aims to discuss how to extend the implementation of ACTS among all AUN member universities and partner universities under the 'Re-Inventing Japan Projects' (ACTS-UI).

The system of AUN-ACTS seems promising since it has simplified university administration process of transferring credit across countries. In

this regard, as members of AUN, the four universities – *UI, UGM, ITB* and UNAIR have the obligation to comply with AUN policy to promote student mobility through the ACTS. In practice, the role of AUN in promoting student mobility is depicted in how Indonesian higher education and its member universities react to AUN.

Universities respond to the mandate from AUN differently. UGM, as an example, through its own policy - Statute UGM Article 17 (3) decides to promote student mobility through ACTS program as a strategy amongst several others in internationalizing its curriculum (Hadmoko, Arsana, & Almahendra, 2015). Similarly, UI as the host for the AUN-ACTS secretariat supports the program through the provision of 10 scholarships per year for students and provides detailed information on selection procedure on its International Office website (ACTS, 2009; UI, 2017).

Drawing on Jayasuriya and Robertson (2010, p. 1), the adoption of AUN-ACTS by AUN member universities reflects rescaling of the governance of higher education institutions as the globalization of higher education through AUN-ACTS involves with 'reconstitution of the scales of which governance takes place'. In this regard, the organization of transfer credit using AUN-ACTS illustrates the emerging new modes of governance by AUN in the region. Indeed, the presence of regional governance by AUN is obvious as shown in the organizational structure of AUN in which the role of AUN Secretariat includes to coordinate and monitor while member universities have an obligation to adhere to AUN policies/ regulations (AUN, 2012). Moreover, the implementation of AUN-ACTS to support student mobility among AUN member universities reflects the influence of AUN as the regional institution on university practices. The mandatory of AUN-ACTS among member universities in addition to the implementation of national credit transfer system reflects what Wessel and Wouters (2008) referred as 'multilevel regulations'. All of this suggests the emergent strong role of AUN in promoting student mobility across the region, which is in line with de Jesus (2016), who states that AUN with its small number of member universities has the potential to pioneer projects, such as credit transfer arrangement. However, the interplay of the presence of multilevel regulations indicates the influences of various factors on student mobility, hence it becomes complicated to recognize AUN's role in promoting student mobility at the institutional level.

An understanding of the context of Indonesian higher education with regard to internationalization via student mobility becomes relevant to capture the role of AUN, which is in line with Zmas (2015), who argues that national context shapes student mobility. At national level, rooted in Indonesian higher education's long-term internationalization goal to promote nation's competitiveness through enhancing student global competence (MoRTHE, 2015) a Guide to Credit Transfer Program was launched by the Directorate General for Learning and Students, Ministry of Research, Technology and Higher Education, in 2017 (DGHE, 2017). It provides a guidance on transferring credit gained from study overseas at partner-university for a

particular period. All universities, both public and private are allowed to participate in the program but only with partner university who has Memorandum of Understanding, which includes the principles of equality, equity and mutual benefit as stipulated in the Constitution Number 24/2000 on international partnership (MoRTHE, 2017). This allows universities in Indonesia to study various credit transfer systems of partner universities overseas. Government supports for student mobility through this program include scholarship provisions. It shows to some degree the development of Indonesian higher education that it has its own system of transfer credit.

Another important context of Indonesian higher education system is reflected in the establishment of the Indonesian Qualifications Framework (IQF) as a reference in identifying competence for each level of qualification (MoRTHE, 2016; Santoso, 2014). The IQF provides an understanding of 9 qualification levels and its equivalent learning outcomes from various forms of education, i.e., formal, non-formal, informal or work experiences (Moeliodihardjo et al., 2015). Thus, the IQF serves to complement the ACTS in recognizing learning outcomes and qualification undertaken from an overseas institution.

Furthermore, the context of higher education reflecting dynamic within Indonesian higher education system is originated from its basic law and strategic plan. In this case, the government policy also influences student mobility (Hénard, Diamond, & Roseveare, 2012). The preamble of Indonesian Higher Education Law 12/2012 states that:

> "Higher education, as part of the national education system, plays a strategic role in developing the intellectual life of the nation and advancing science and technology with the aim, among others, to increase national competitiveness in the context of globalization" (OECD-ADB, 2015, p. 184).

To implement the law, vision of higher education as stated in the Strategic Plan 2015-2019 (MoRTHE, 2015, p. 21) is "the realization of quality higher education along with the capability of science and technology to support competitiveness of the nation" (*Terwujudnya pendidikan tinggi yang bermutu serta kemampuan iptek dan inovasi untuk mendukung daya saing bangsa*). Whilst the objective of the strategic plan is:

> "To increase the relevance, quantity and quality of highly educated human resources, and the ability of science and technology and innovation for the excellence of the nation's competitiveness" (*Meningkatnya relevansi, kuantitas dan kualitas sumber daya manusia berpendidikan tinggi, serta kemampuan Iptek dan inovasi untuk keunggulan daya saing bangsa*) (MoRTHE, 2015, p. 22).

Those statements showing competitiveness as main orientation has driven universities eager to become a World-class University or Research University

alongside with development of internationalization programs among universities. The common practices of internationalization as appeared in universities' websites include the use of English in the university website (even though Bahasa Indonesia is the national language), and availability of information on student mobility (Author, 2009). Thus, internationalization of higher education through student mobility, such as twinning program had been started before AUN promoted student mobility in 2011. In this respect, in particular, the DGHE released the Ministerial Regulation Number 49 on Standard of National Higher Education, and the Regulation number 14 about collaboration amongst institutions, including through twinning programs, joint and double degrees, student exchanges and the shared use of resources in order to achieve the objectives of ASEAN Community, such as improving competitiveness of the nation, and increasing affordability, equality, relevancy, self-reliance and welfare (Richardson, 2015, p. 31). This context suggests the readiness or capacity of Indonesian higher education in responding to globalization through AUN-ACTS. This is in line with Chatterton & Goddard (2000), who explain that university engagement with regionalization is shaped by the availability of knowledge, skill, and infrastructure that in this paper, is shown through various policies, regulations, and programs that are aligned well from university to state and regional levels.

Overall, the discussion shows the context of Indonesian higher education, indeed, supports AUN's role in promoting student mobility. However, in addition to contextual factors of Indonesian higher education, regional environment, such as an emerging new network provides an opportunity to learn for universities indicating the enhanced potential transformative space to promote student mobility. As an example, the SHARE (Support to Higher Education in the ASEAN Region) program – a collaboration with European Union (e.g. British Council, Campus France, EP-Nuffic, the German Academic Exchange Service (DAAD), the European University Association (EUA), and the European Association for Quality Assurance in Higher Education (ENQA), was launched in 2015 with goals to provide support for ASEAN countries in harmonizing collaboration among higher education in the region based on European experiences through strengthening regional cooperation and enhancing the quality, competitiveness and internationalization of ASEAN HE for institutions and students (SHARE, 2016b). This project provides various supports to develop capacity, including a seminar on credit transfer in Jakarta attended by four Indonesian universities, two Malaysian universities, and representatives from AUN, EU, ASEAN and SEAMEO-RIHED (SHARE, 2016b). In particular, the seminar discussed designing a study program based on learning outcomes in order to support transfer credit between universities. Secondly, SHARE aims to design credit transfer system to support student mobility between ASEAN countries and universities across Europe using Bologna experience by making ACTS compatible with ECTS in Europe. Thirdly, SHARE (SHARE, 2016a) provides technical-supports in five areas 1) Policy

Dialogues on harmonization of higher education in the ASEAN region, 2) Implementation of the ASEAN Qualifications Reference Framework (AQRF) and the development of National Qualification Frameworks, 3) Fostering the ASEAN QA Framework (AQAF) at regional/national levels, 4) ASEAN Credit Transfer System (ACTS) & ASEAN-EU Credit Transfer Systems (AECTS), 5) ACTS & AECTS Student Mobility with Scholarships. Hence, AUN role is supported by other networks who promote student mobility.

The ACTS, obviously, gives benefits for its member universities in ASEAN countries with the implementation of an international standard. The unique qualities of AUN member universities give other benefits, such as the ability to participate in collaboration through cost-sharing basis: the implication of "the spirit of ASEAN-ness, which incorporates equal partnership and regional belonging and identity" as the unique qualities of AUN university members (AUN, 2011, p.13). In this kind of mobility network, the relationships appear to be what Knight (2016, p.117) describes as convergence and harmonization, which is "stronger, more strategic links involving systemic changes". In general, it reflects how AUN has played its role in promoting student mobility in the region. However, even though it is a political mandate for member countries to support the success of AUN in promoting student mobility, further study is required to identify potential issues associated with the implementation of the credit transfer system across universities in the region.

The discussion shows that context of Indonesian higher education with the presence of national systems of quality assurance, credit transfer, and qualification framework appear to contribute in promoting student credit mobility in the region. It implies that implementation of AUN-QA and AUN-ACTS may be affected by the extent of higher education development. This is in line with Keo and Jun (2016) who state that disparities among higher education institutions across the region present a challenge for ASEAN as a regional association. In particular, Hou, Hill, Chen, Tsai, & Chen (2017, p. 13) mention about 'disparity between systems and expectations, particularly in terms of income demographics, accreditation, and linguistics' might affect collaboration in the region. Moreover, the AUN-QA reports about the existing discrepancy in the number of study programs assessed by AUN-QA across ASEAN countries (AUN-QA, 2015) and diversity of QA agencies in ASEAN (Dhirathiti, 2017). All of these suggest the possibility of a different story if Indonesian higher education system has not been at its current development.

CONCLUSION

To sum up, this paper shows that AUN has played an important role in promoting student mobility within the ASEAN region. However, as a regional system, the achievement of AUN's goals, such as promoting student mobility depends on the other players within the region, which is all AUN member universities. Thus, the contribution of the other players is a must to achieve

the objective. In this regard, the context of players, which is in this paper is the development of Indonesian higher education system and the four AUN member universities, have significant influences. Moreover, the regional environment affects universities in addressing regionalization. The existing various networks in the region constitutes a learning space for all universities to gain knowledge and develop skills relevant to develop the region alongside with AUN.

ACKNOWLEDGMENT

The author thanks Zulfa Sakhiyya for preparing the initial abstract and sharing idea.

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Manuscript submitted: ***August 14, 2018***
Manuscript revised: ***October 10, 2018***
Accepted for publication: ***November 30, 2018***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 34-53
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1867447

A Review of Classical Motivation Theories: Understanding the Value of Locus of Control in Higher Education

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ABSTRACT

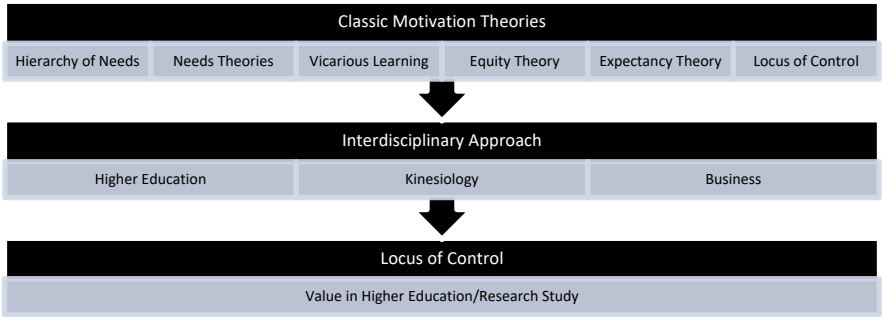
This manuscript demonstrates the value of understanding locus of control in higher education. Understanding this value provides educators with the ability to potentially predict academic outcomes and have the foresight to guide students to achievement. First, the manuscript identifies and explores the classic theories of motivation from the mid-1900s. Then, a study is conducted that hypothesizes a correlation between demographic variables (age, gender, graduate/undergraduate classification) and locus of control using Rotter's (1966) locus of control questionnaire. Finally, examples from four different disciplines are provided. This manuscript proposes suggestions for future research that will contribute to the findings of the overall construct of motivation, and more specifically, student locus of control in higher education.

Keywords: hierarchy of needs, higher education, locus of control, motivation, needs theories, vicarious learning

This paper defines motivation and provides an overview of classic motivation theories. In order to demonstrate the value of understanding a college student's locus of control, the underlying nature of the construct, motivation, is discussed. Motivation is analyzed and deconstructed into understanding a person's perception, or locus of control. The manuscript details locus of control (LOC) in higher education by providing specific

research studies to further exemplify the value of understanding the impact on a student's academic success. Finally, suggestions for future research are provided. The purpose of this paper is to demonstrate the value of understanding a college student's locus of control and include various examples not only in higher education but from an interdisciplinary component to gain a broader perspective. Figure 1 depicts the progression of this manuscript.

Figure 1



LITERATURE REVIEW

Motivation is a valuable construct in life that determines the degree of success in outcomes (i.e. students in school, professionals at work, potentially the well-being of personal and professional relationships, etc.) and is defined in a number of different ways. Jones and George (2017) defined motivation as a psychological force that directs behavior. Ormrod (2016) defined motivation as an internal state that stimulates an action and helps maintain focus towards an end goal. Wiegand and Geller (2005) proposed the idea that motivation was a push towards achievement, as well as a failure avoidance. Ryan and Deci (2000) defined motivation as moving towards doing something. Aarts, Gollwitzer, and Hassin (2004) cited motivation as the behavior that drove one towards an end state. Miller, Galanter, and Pribram (1960) presented the notion that motivation could be a model for thinking, and Locke and Latham (2002) presented a simplified definition of motivation as intentional mindful goal setting. Robbins and Judge (2017) defined motivation "as the processes that account for an individual's intensity, direction, and persistence of effort toward attaining a goal" (p. 209). The commonality among these definitions is that there is a starting point and an *intentional* ending point. Moreover, motivation has been linked to goals, mindset, and internalized motivation. In higher education, the concept of motivation impacts a multitude of opportunities for students, such as choosing whether or not to attend a college, admission into a particular university, earning a certain grade point average (GPA), acceptance into a specific academic program or specialized group, or holding a distinct position within

a university organization. Therefore, it is important to gain a historical perspective and understand the evolution of the classic motivation theories.

Classic Motivation Theories

Table 1 identifies and outlines the classic motivation theories of the mid-1900s that came before Julian Rotter's (1966) introduction to the idea of locus of control. Each of the prior theories contributed to the origination of the locus of control construct (identifying whether particular outcomes can be attributed to internal or external sources).

Table 1: Connecting Motivational Theories

Author	Theory	Summary
Maslow, A. (1943)	Hierarchy of Needs	There are five basic needs all people possess organized in a hierarchical fashion (beginning at the bottom). As each need is satisfied (at least partially), other needs arise. The structure is: physiological (lowest), safety, belongingness/love, esteem, and self-actualization (highest).
McClelland, D. (1961)	Need for Achievement	The need for an individual to perform well on challenging tasks and meet self-set standards of excellence.
McClelland, D. (1961)	Need for Affiliation	The need for an individual to maintain (good) relationships, feeling accepted and included among others.
McClelland, D. (1961)	Need for Power	The need for an individual to hold influence and/or control over others or an entity.
Bandura (1962)	Vicarious Learning	Also known as observational learning. When an individual (learner) is motivated to perform a task after watching another individual (model) perform the task and seeing positive outcome(s). The learner will also be motivated to avoid certain tasks when seeing negative outcomes.
Adams, J. (1963)	Equity Theory	People's perception that their effort (inputs) will fairly result in expected desired results (outcomes) as related to others' efforts. Meaning, the degree of effort I put forth will result in a particular outcome, which is the same for all other workers.
Vroom, V. (1964)	Expectancy Theory	Motivation is high when workers believe that if they put forth a high degree of effort, there will be a high degree of performance, leading to a highly desired outcome; it identifies three factors impacting one's motivation: 1) expectancy, 2) instrumentality, and 3) valance.
Rotter, J. (1966)	Locus of Control	The idea that individuals hold themselves accountable or place blame elsewhere as a result of certain outcomes.

Hierarchy of Needs

These motivation theories were exemplified across industries and span a number of disciplines in higher education including business, kinesiology, psychology, and sociology. Abraham Maslow (1943) constructed the infamous Hierarchy of Needs, which examined motivation on a basis of need fulfillment. In fact, Robbins and Judge (2017) argued that this is the best-known of all motivation theories. The premise was that there was a hierarchy of needs that served as motivational factors, and once a lower-tiered need was satisfied (fully or partially), the next need within the hierarchy

arose. As students entered university life, they progressed through this hierarchy. It began with filling physiological needs. Students were, for the first time, responsible for life's basic needs – they were now responsible for ensuring they ate healthy foods, stayed hydrated, stayed active, and kept good hygiene. Once that need was at least partially satisfied, the second need within the hierarchy arose - safety/security. This included becoming responsible for maintaining their daily schedule, locking their dorm room doors, paying more attention to their surroundings, checking in with others, and the like. Ultimately, it was feeling secure in their environment. According to Maslow (1943), children preferred to be in routine environments to feel secure; any disruption to an orderly, predictable setting would make them feel unsafe. The third need to arise was love/social-belongingness, which included maintaining various friendship groups on campus, actively participating in classroom group activities, and social events. Here, Maslow (1943) revealed that this cycle of needs repeated, but the sense of belonging remained the center. The fourth need in Maslow's hierarchy was esteem, which included everything from independence and self-respect (internal), to receiving attention from others, and social status (external) (Robbins & Judge, 2017). Maslow (1943) disclosed that fulfilling this need created a sense of purpose and usefulness to society. Finally, when the other four needs were at least partially met, if not fully met, students achieved self-actualization. This was a state of enacting our best self. Ormrod (2016) argued that "individuals striving toward self-actualization seek out new activities as a way of expanding their horizons and want to learn simply for the sake of learning" (p. 431). For university students, it meant proactively managing their calendar, sharing personal strengths, identifying weaknesses and creating a plan to turn those weaknesses into strengths.

While Maslow's hierarchy presented the progression of motivation for students in higher education in a need-based, practical manner, it did not demonstrate the value of locus of control. Determining a student's locus of control would provide an additional level of self-awareness, which would be advantageous in their life including their higher education journey. Students could be educated to hold themselves accountable, creating a better understanding and visibility to achieving their academic goals. If students held themselves accountable, they may be more likely to progress through this hierarchy in a more efficient, and still effective manner. Similar to Maslow's Hierarchy of Needs, David McClelland introduced his Needs Theories to the academy.

Needs Theories

David McClelland (1961) identified three needs theories that were motivationally-based, rather than Maslow's survival-based needs. These needs were 1) the need for achievement, 2) the need for affiliation, and 3) the need for power. The need for achievement (otherwise known as achievement motivation (Ormrod, 2016)) from a higher education perspective, was exemplified along a spectrum that spanned from students earning their degree,

to earning a particular GPA. Ormrod (2016) also indicated that "individuals with a stronger motive for success tend to seek and tackle moderately difficult tasks… without worrying about mistakes they make or stumbling blocks they might encounter" (p. 442). The need for affiliation was showcased in a number of ways. Jones and George (2017) described this need as the "extent to which an individual is concerned about establishing and maintaining good interpersonal relations, being liked, and having the people around him or her get along with each other" (p. 313). As an example, some students joined fraternities or sororities to feel a stronger sense of community and belonging. Other students took the lead in course group work, ensuring it operated at an optimal level and everyone enjoyed the experience; some students focused on developing working relationships with their instructors. The third need, the need for power, in higher education was similar to any other situation in life and can take place in the classroom, on a sports team, with an extracurricular group, or where there was another person who was willing to be influenced. Students possessed any of these needs at any point in their college career, but usually had a tendency to lean towards one or two. Meaning, the need for achievement was an internal motivator (Robbins & Judge, 2017), therefore, this drive was not universally shared. However, at various times, one may have experienced an internal drive for achievement.

Coupling the locus of control construct to each of these needs could bring a new, valuable dynamic to students. For example, it could be predicted which students had a high need for achievement by determining their locus of control (Valdes-Cuervo, Sanches Escobedo, & Valadez-Sierra (2015)). Additionally, students with a high need for power could translate into a higher need for control, and the same argument could hold true. Those with an internal locus of control often felt in control, or as though they had the power to be successful. Students with an external locus of control may not be as ambitious to hold power, as it would be outside of their control to obtain it. Lastly, it would be valuable to know a student's locus of control in regards to affiliation. Those with a high need for affiliation and maintained an internal locus of control may be more likely to take an initiative to become more involved socially (i.e. join organizations and student groups to increase social interaction to become a part of a group). Those with an external locus of control may be more likely to maintain a high need for affiliation but wait for an invitation to join a group, which could be problematic if that student was feeling lonely and detached socially. Thus, the value of knowing a student's locus of control could help to resolve these issues. Another benefit to affiliating with other students might be vicarious learning.

Vicarious Learning

A benefit to group work in higher education and a natural consequence of affiliation originated with Bandura (1962) identified as *vicarious learning*. Described as learning through observation, the idea was that the learner saw success through someone else and attempted to repeat the

behavior with the expectation of achieving a similar outcome. Likewise, if the learner was observing behavior that had a negative outcome, the learner may be less likely to repeat that behavior. Jones and George (2017) described vicarious learning as a situation when someone observed another and was motivated to replicate the behavior; they also explained its motivational nature when particular functions (as well as behaviors) were duplicated in order to gain a particular skill. An example was to demonstrate a task first. Hypothetically, if an instructor were teaching the a new function in Microsoft Excel to someone who has never performed this function previously, taking the learner/observer through each step within the process would allow the student to participate in the learning experience through observation. This experience would provide a level of confidence to complete the task independently in the future, of course, taking into consideration task complexity and learner capability. Moreover, a way to increase self-efficacy (confidence in one's ability to complete a particular task) was to watch another person successfully complete an activity, reinforcing the fact that it was possible to complete, and with similar skills could be completed by the observer.

Not only were there multiple manners in which to identify motivation, there were various techniques used across disciplines, from managers in corporate America (business context) to university professors in the classroom (education context). Khaldi (2012) argued that motivation-based teaching techniques could be implemented to improve student learning. These techniques included demonstrating commitment to student learning, expressing empathy when necessary, promoting a sense of urgency when called upon, showing patience, creating an enjoyable learning atmosphere, and expressing clear and fair classroom expectations.

Here, it is valuable to understand a higher education student's locus of control as related to vicarious learning. Students with an internal locus of control would be more likely to take the initiative to learn something from other students. Whereas a student in higher education with an external locus of control, who needed to learn something in particular for a course, would be less likely to take that opportunity and expect that opportunity to come to him/her, regardless of whether or not he or she felt the situation was equitable.

Equity Theory

The Equity theory, coined by J. Stacy Adams (1963), related motivation to perception. Jones and George (2017) defined the equity theory as "a theory of motivation that concentrated on people's perceptions of the fairness of their work outcomes relative to, or in proportion to, their work inputs" (p. 313). For example, people believed there was a direct relationship between inputs (effort) and that they were fairly represented through outputs (outcomes). This meant that students believed that if they worked hard, they would be successful. If they did not work hard, they would not be as successful as they would have been if they would put forth additional effort. Furthermore, they believed that those who do not complete assignments or

attend class would not be as successful as those who fulfilled course requirements because that would not be fair. Ultimately, the same inputs should be equated to the same outputs, without judgement, impartiality or any other factor that would cause inequity.

Understanding a student's locus of control could prove valuable here. When students believe the situation is equitable, they continue with their normal behavior. However, those individuals with an internal locus of control who believed the situation was not equitable might take it upon themselves to either make the situation equitable, or work around the inequity to become successful. Students with an external locus of control would place blame on the inequity for not succeeding. Similar to the Equity theory is the Expectancy theory.

Expectancy Theory

In his Expectancy theory, Victor Vroom (1964) correlated effort with performance and outcome as a factor of motivation. He believed that high effort would lead to a stronger performance and desired outcomes. Robbins and Judge (2017) defined it as "a theory that says that the strength of a tendency to act in a certain way depends on the strength of an expectation that the act will be followed by a given outcome and on the attractiveness that outcome to the individual" (p. 229). Neck, Houghton, Murray, and Lattimer (2017) described it as the likelihood one was motivated and executed thoroughly if they expected certain results. Jones and George (2017) detailed Vroom's three-part equation that influenced motivation (which included effort, performance, and outcomes) and added the psychological aspect: expectancy, instrumentality, and valence. Expectancy was the anticipation that one has to achieve a particular goal. Instrumentality was described as "a person's perception about the extent to which performance at a certain level will result in the attainment of outcomes, (and, valence was) how desirable each of the outcomes available from a job or organization is to a person" (p. 306). In education, the translation was as simple as: If a student wanted to earn an "A" in the course, he or she needed to attend class regularly, read, and study (effort), which should lead to earning points throughout the semester (performance), and ultimately an A (outcome).

The advantage in understanding students' locus of control as related to the Expectancy theory could also prove predictable. For example, when female students anticipated, or expected, the adjustment each would experience in college, they exhibited a higher adjustment rate when maintaining an internal locus of control (Mooney, Sherman, & Lo Presto (1991)). Therefore, those students with an external locus of control were more likely to have difficulty adjusting to life at the university because they were less able to understand what to expect during the transition.

While each of these classic theories in motivation have impacted decades of research, the addition of locus of control proved valuable, as illustrated in each scenario above and exemplified by students in higher

education. To advance the motivation construct from the mid-1900s to a current day research study that includes understanding students' locus of control.

Locus of Control in Higher Education

Locus of control is where an individual placed accountability for an outcome – positive or negative. When receiving praise or blame, did the individual reflect and analyze his or her own actions, or did the individual immediately look at external factors as the source that led to the outcome? Neck et al. (2017) described locus of control as a spectrum in which a person or group felt they had control over their circumstances. One manner to explain locus of control in education was for students to examine the source of earning their grades. Once a student completed a semester, grades were finalized and posted. A student with an internal locus of control believed the course grade was earned as a direct result of his or her honest effort, attending classes, taking notes, actively engaging, participating in activities and assignments, and truly focusing on the time committed to the course - reading and studying material. This was all in proportion to the earned grade. Continue to assume this student had an internal locus of control, he or she was not understanding the material, or was performing below the personal expectations. This student would believe it was his or her responsibility to proactively speak with the professor, seek a tutor or another form of additional assistance to be successful in the course.

A student with an external locus of control would have the perception that the grade received was based on other external factors, including relative performance of other students in the course (i.e. grading on a curve), other students' performance in group work, or extenuating circumstances during that semester (personal issues outside of this student's control). Other external factors could include poor instruction, (lack of) genetic intelligence, familial expectations for academic performance, the student's background (people from *my* background do not do well in school), and/or a person's luck.

Therefore, the studies selected within this manuscript were based on a number of criteria. First, a search was performed with keywords such as: locus of control, motivation, higher education, and academic locus of control. Second, scholarly databases searched included APAnet, Google Scholar, OhioLink, ERIC, and EBSCO. Next, the search only included databases with peer-reviewed articles. Third, additional guidance was sought from faculty members with prior published research within the power and locus of control (motivation) arena.

Studies excluded from the selection were based on the following measures. First, only English-language articles without a paid subscription were selected. Second, these English-language articles had to be published in peer-reviewed journals. Third, a *Find* search was performed to ensure locus of control was included in the study. Fourth, these studies were selected within the last 5+ years. There was one study selected from 1991 because it directly studied the impact of locus of control in higher education.

The intention of this section was to provide five studies contributing different arguments that demonstrate the value of learning a student's locus of control. These studies cover a vast number of locus of control constructs (e.g. academic locus of control, self-esteem, parental locus of control, academic procrastination, self-concept, and goal orientation). Table 2 highlights each of these studies, including authors, scope of the study, and key points of the study as related to locus of control as related to education.

Table 2: Various Locus of Control Studies

Authors	Participants/Scope	Key Points
Curtis, & Trice (2013)	322 college students assessing academic locus of control	Demonstrated statistical significance between internal locus of control and other measures (i.e. GPA, procrastination, and emotional state)
Mooney, Sherman, & Lo Presto (1991)	Explored multiple factors (i.e. academic locus of control, self-esteem, and distance from student's home) to determine whether or not they would predict adjustment to college	Female students with an internal locus of control and high self-esteem demonstrated most effective adjustment to college
Lloyd, & Hastings (2009)	Examined parental locus of control in mothers with disabled children	Concluded mothers with external locus of control did not hold themselves personally responsible for their child's disability
Rakes, Dunn, & Rakes (2013)	Analyzed graduate-level academic procrastination	Students with an external academic locus of control were more likely to procrastinate
Valdes-Cuervo, Sanches Escobedo, & Valadez-Sierra (2015)	Studied locus of control, self-concept, and goal orientation in high-achieving Mexican students	High-achieving students illustrated an internal locus of control, increased levels of goal motivation, and positive self-concepts as related to academics

Curtis and Trice (2013) conducted a study with 322 college students assessing academic locus of control. Corresponding with prior research, they established a statistical significance between an internal locus of control and other measures including "grade point average, number of absences, academic entitlement, procrastination, anxiety, and depression" (p. 827). Another study performed by Mooney, Sherman, and Lo Presto (1991) explored the relationship among academic locus of control, self-esteem, and the distance from the student's home (as perceived by the student) and applied those factors to determine whether or not they would be predictors of adjustment in college. The study discovered that the student's adjustment to college was not due to one variable in particular, but the culmination of multiple variables. As related to locus of control, the study results showed that "female students possessing an internal academic locus of control and a high level of self-esteem reported a more effective adjustment to college (academic, personal, social, and attachment) than female students possessing either an external locus of control or low self-esteem" (p. 447).

Therefore, it can be concluded that one's locus of control had a significant impact on their motivation and potential achievement – whether or not he or she thought they can be successful academically (or elsewhere in

life). For example, if a student thinks he or she is not capable of earning a 4.0 GPA, hold a particular position or earn a given amount of money because of various external factors outside of my control, how likely is that student to make an honest effort to achieve those goals? Lloyd and Hastings (2009) performed a study that examined parental locus of control as well as the psychological well-being in mothers who had children with a diagnosed intellectual disability. They found that mothers who had an external locus of control did not hold themselves personally responsible for the disability in their child but there was a significant association with both depression and stress. They concluded that "a mother who feels unable to control her child's behavior may develop learned helplessness," (p. 112) another potential result of having an external locus of control. Therefore, it can be interpreted that if those same mothers had an internal locus of control, they would be more likely to be proactive and motivated to improve their child's quality of life or what has an impact on their child's intellectual disability. The value this study brought to this manuscript was to showcase the importance of parental locus of control and the impact it has on student learning. Mothers possessing an internal locus of control who had disabled children often made an effort for their child's success, which can have a ripple effect on the child – motivating them to believe in their own academic success.

Rakes, Dunn, and Rakes (2013) examined academic procrastination, specifically in online graduate coursework. Results of the study validated prior research in locus of control behaviors. Students were more likely to procrastinate if they maintained an external locus of control (i.e. "external causes," p. 112). Similarly, and also in line with prior research, Valdes-Cuervo, Sanches Escobedo, and Valadez-Sierra (2015) studied locus of control, self-concept, and goal orientation in high-achieving Mexican students. Results revealed that these high-achieving students illustrated internal locus of control, increased levels of goal motivation, and positive self-concepts as related to academics. However, it should be noted that female participant "scores were significantly higher on academic self-concept and internal locus of control, than males" (p. 21).

If locus of control was identified in each student early in his or her respective academic career, by the time the student entered a university, he or she should be able to self-identify scenarios in which the previously identified external locus of control could potentially limit him or her from being successful in the future. Therefore, each student should work to create an environment leading to academic achievement. If unable, the student could seek additional assistance to develop a mindset where expectations are directly in line with respective academic goals. Future longitudinal research could be conducted in this manner.

Interdisciplinary Research

Locus of control, regardless of the context, impacts one's life perspective. There are four studies below that range between kinesiology (health) and business that investigated the impact on one's locus of control

and the outcomes of the situation. For example, Sargent-Cox and Anstey (2015) studied 739 adults across multiple generations to uncover whether or not there was a relationship between health locus of control and age-based stereotypes. The relationships were confirmed in that there is a link between these stereotypes and health locus of control, specifically with external locus of control and health expectancies – those who do not believe they impact their own longevity are less likely to live longer.

Moreover, Henninger, Whitson, Cohen, and Ariely (2012) developed a study which confirmed a direct correlation between external locus of control and the likelihood one had to engage in negative health behaviors, with results including morbidity. They further endorsed the notion that one's locus of control impacted an individual's health and can potentially be linked to disease.

Lastly from a kinesiology perspective, Hutcheson, Fleming, and Martin (2014) researched the impact on one's locus of control and their respective health. As demonstrated in previous research across multiple disciplines, those with internal locus of control feel as though they have more control and take initiative to maintain positive health. Meaning, those individuals with an external locus of control were more likely to be unhealthy, than individuals with an internal locus of control.

Aziz and Tariq (2013) investigated locus of control among business executives. Their conclusion was in-line with behaviors previously discussed and associated with internal and external locus of control. They discovered the following four positions:

1) There was no association between internal locus of control and decisional procrastination (rather than behavioral procrastination),
2) A substantial positive relationship was present between external locus of control and decisional procrastination, consistent with prior findings (Hampton, 2005; Milgram & Tenne, 2000),
3) A strong correlation was demonstrated between internal locus of control and executives with more job tenure, and
4) There was a substantial "difference in internal locus of control among public and private sector managers and non-managers… People who believe that locus of control resides in outside forces such as organizational context and job status are more likely to experience decisional procrastination" (p. 41)

Overall, results of this study found significant correlation between locus of control and decisional procrastination. Meaning, the nature of the position, experience within the position and/or the industry, as well as the individual's perception to control outcomes impacted the timeliness in making decisions.

Where an individual holds the source of success or failure of an outcome has a major impact on his or her life. The individual's life is impacted in various ways – their ability to control the situation, their mindset, their motivation, their successes and failures, their attitudes, their support system, and their health. Being able to recognize this early in one's life could

allow a new perspective, which may alter outcomes if acted upon in a patient and thoughtful manner, with positive intent.

RESEARCH METHOD

Study Participants

Participants within this study were enrolled in either undergraduate or graduate programs at a university and included both domestic and international students. Table 3 provides extensive details. The summarized demographics of the 101 participants are as follows:

- 64 were males (63%) and 37 were females (37%)
- The mean average age was 26.98, with the age range of 15 to 55 years old (SD=9.43)
- 50 were undergraduates and 51 were graduates
- 87 of the respondents shared their GPA (range: 2.3 to 4.0); the mean GPA was 3.51 (SD=0.437)
- 89% of the participants identified English as their first language
- 78% of the participants identified themselves as Caucasian, 12% identified themselves as African American, 8% as Chinese, and 2% as Hispanic
- 70% of the participants reported themselves as not married
- 32% rented, 31% owned their homes, and 38% did not own nor rent their home
- All but 1 participant identified themselves as motivated
- 92% of the participants said they enjoyed school, almost 7% said they did not enjoy school, and 1 participant did not answer this question

Study Design

This study was designed to determine whether a correlation existed between a student's locus of control and their age, gender, or classification (graduate versus undergraduate). The study itself was conducted over a two-week time period. The demographic questions were basic and straightforward, while the tool to measure locus of control was created by Julian Rotter (1966). Rotter's (1966) tool consisted of 29 binary response questions, i.e. either answer A or answer B. The hypotheses for this study were:

1. Age would not be a predictor of locus of control.
2. Gender would not be a predictor of locus of control.
3. Graduate students would demonstrate a higher internal locus of control (i.e. a lower score) than undergraduate students.

Data Collection Procedures

These paper questionnaires were individually distributed in person and conducted on a voluntary basis. Participants were recruited to participate from in various places across multiple campuses, including classrooms, study areas, and areas frequented by students. The questionnaire included a ten-

question demographics section and twenty-nine questions related to locus of control (Rotter, 1966). Upon completion, they were collected to record and analyze data. The questionnaire was scored according to Rotter's (1966) scoring methodology.

Table 3: Stastics Summarized

	Overall	Females	Males	Undergraduates	Graduates
Participant Count	**101**	37	64	50	51
GPA:					
Mean	**3.2**	3.6	3.4	3.2	3.8
Median	**3.1**	3.7	3.4	3.1	3.8
Mode	**3.0**	4.0	3.0	3.0	4.0
Age:					
Mean	**27**	29	26	21	33
Median	**23**	24	23	20	31
Mode	**18**	24	23	18	24
Undergraduate student	**50**	16	34	50	0
Graduate student	**51**	21	30	0	51
Enjoy school?					
Yes	**93**	35	58	43	49
No	**7**	1	6	6	2
No response	**1**	1	0	1	0
Race/ethnicity					
Caucasian	**79**	32	47	36	43
Chinese	**8**	1	7	7	1
African Am	**12**	4	8	7	5
Hispanic	**2**	0	2	0	2
English - 1st language					
Yes	**90**	35	55	41	49
No	**11**	2	9	9	2
Married?					
Yes	**30**	10	20	3	27
No	**71**	27	44	47	24
Living					
Rent	**32**	14	18	12	20
Own	**31**	11	20	2	29
N/A	**38**	12	26	36	2
Motivated?					
Yes	**100**	36	64	49	51
No	**1**	1	0	1	0

Instrumentation

Julian Rotter (1966) built his research upon his own social learning theoretical experience as well as that of the following scholars, in chronological order: Veblen (1899), Merton (1946), McClelland, Atkinson, Clark, and Lowell (1953), Goodnow and Postman (1955), Goodnow and Pettigrew (1955.), Wyckoff and Sidowsky (1955), Atkinson (1958), Seeman (1959), and Cohen (1960). These scholars contributed to existing literature

with research that included one's perception of power, or control, and their tolerance of luck, or chance. Rotter then created a systemic questionnaire that only permitted the respondent to select one of two answers for each question. Upon the scoring methodology, Rotter was able to determine whether the respondent believed that he or she had control over the situation or whether the outcome was attributed to external factors, such as chance or luck. He believed respondents scored along a continuum, ranging from internal to external locus of control. This score could be used as a predictor in future situations to determine where the respondent would place accountability based upon success or failure.

Analysis

The goal of this study was to determine whether locus of control would serve as a predictor upon specific demographics. A number of analyses conducted on the data were collected. Chi-square tests performed in SPSS were to determine statistical significance on nominal data, including further examination. Table 3 summarized each of the statistics within each demographic, and Table 4 dissected scoring instances between gender and undergraduate/graduate classifications. Tables 5 and 6 demonstrated P-Plots of age, while Tables 7 & 8 demonstrate Q-Plots of age. Table 9 analyzed the data via Bayesian Correlation, which includes the 95% credible interval for both age and GPA. Lastly, Table 10 showcased the Factor Analysis including communalities, total variance and component matrix.

Table 4: Rotter's Scores Counted

Score	Overall	Females	Males	Undergraduates	Graduates
2	**1**	1	0	0	1
3	**0**	0	0	0	0
4	**5**	1	4	2	3
5	**3**	1	2	1	2
6	**11**	5	6	5	6
7	**7**	3	4	4	3
8	**13**	3	10	9	2
9	**9**	3	6	4	5
10	**12**	5	7	7	5
11	**5**	1	4	3	2
12	**10**	5	5	4	6
13	**11**	4	7	6	5
14	**5**	1	4	2	3
15	**2**	0	2	2	0
16	**2**	1	1	0	2
17	**2**	1	1	0	2
18	**3**	2	1	1	2

Table 5: Normal P-P Plot of Age

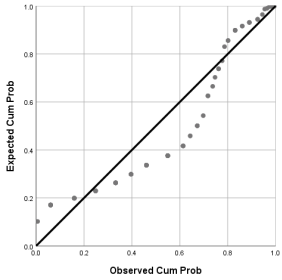


Table 7: Normal Q-Q Plot of Age

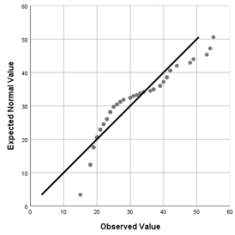


Table 6: Detrended Normal P-P Plot of Age

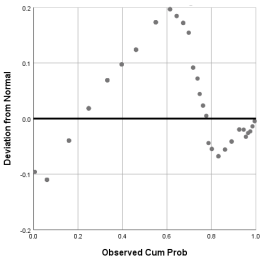


Table 8: Detrended Normal Q-Q Plot of Age

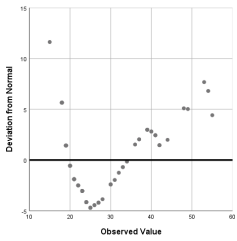


Table 9: Bayesian Correlation

Posterior Distribution Characterization for Pairwise Correlations[a]

			Age	GPA	V69
Age	Posterior	Mode		.548	-.047
		Mean		.534	-.045
		Variance		.006	.010
	95% Credible Interval	Lower Bound		.384	-.237
		Upper Bound		.679	.145
	N		101	87	101
GPA	Posterior	Mode	.548		-.012
		Mean	.534		-.011
		Variance	.006		.011
	95% Credible Interval	Lower Bound	.384		-.218
		Upper Bound	.679		.194
	N		87	87	87
V69	Posterior	Mode	-.047	-.012	
		Mean	-.045	-.011	
		Variance	.010	.011	
	95% Credible Interval	Lower Bound	-.237	-.218	
		Upper Bound	.145	.194	
	N		101	87	101

a. The analyses assume reference priors (c = 0).

Table 10: Factor Analysis

Communalities

	Initial	Extraction
Age	1.000	.778
GPA	1.000	.750
V69	1.000	.035

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.563	52.089	52.089	1.563	52.089	52.089
2	.996	33.187	85.276			
3	.442	14.724	100.000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

Age	.882
GPA	.866
V69	-.187

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

RESULTS

The 101-participant investigation concluded that scores on the 29-question scale ranged from 2 (internal locus of control) to 18 (external locus of control). There were 3 hypotheses within this study. The first hypothesis studied the correlation between age and locus of control, indicating age would not be a predictor in locus of control. This hypothesis was supported. Two groups (ages 15 – 26 and 27-77) were formed and analyzed. There was no significant finding between the two groups. Specifically, their averages were virtually the same (mean: 9.8 vs 10 (older), median: 9 vs 10 (older); mode: (8 versus 12 (older)).

The second hypothesis examined the correlation between gender and locus of control and suggested there would not be a correlation between gender and locus of control. This hypothesis was supported. Although a female held the lowest score (2), scores ranged as high as 18. Additionally, the mean score for females was 9.97, with a median score of 10, and a mode of 12. Male participants held an average mean score of 9.78, with a median score of 9.5, and a mode of 8. Their scores ranged from 4 to 18.

Lastly, graduate students' locus of control scores ranged from 2 to 18, with a mean average of 10.01, a median of 10, and a mode of 6. Ironically, undergraduate students' locus of control ranged from 4 to 18, however, their mean average locus of control score was 9.68, a median of 9.5, and a mode of 8. While a difference of both the average mean and median are marginally higher for graduate students, it was surprising. Therefore, it can be concluded

that while the mode average of higher scores appeared more often for undergraduate students, the third hypothesis was not supported.

RECOMMENDATIONS

From a higher education standpoint, future research is recommended to investigate teacher mindsets and the influence it has on classroom practices, student mindsets and whether or not mindsets can be changed (Gutshall, 2013). Taking this idea further, if the hypothesis held true, it could be examined across disciplines. Additionally, and similar to Pride's (2014) research, learning stories and mindsets should be examined at all educational levels. Future research should seek more cultural depth in education, Valdes-Cuervo et al. (2015) suggested that additional investigations of Mexican students identified as high achievers, as only three publications have occurred within the last decade. Rakes et al. (2013) propose an inquiry including self-efficacy in a similar study on procrastination and attributional beliefs. Additionally, they recommend using course online tracking tools to more accurately identifying procrastination which would include "structural equation modeling" (p. 115). Another area of further research also identified by Locke and Latham (2002) is examining the relationship between goal performance and learning. By providing such a complete perspective, it could be compared globally to determine if results are based on culture or are generalizable to working the human population. As mentioned above, longitudinal research measuring locus of control in students and making adjustments to improve environments could be impactful and additional research could be proven valuable.

From a business industry perspective, recommendations for further research include longitudinal studies of professionals in the actual setting, rather than simulated exercises with college students. For example, when researching behaviors in business, the research environments should include large corporations, small businesses, family businesses in existence for multiple generations, and entrepreneurial start-ups, and begin with young professionals and track their locus of control through each advancement, promotion or significant accomplishment through their career progression. Cultures should be included, along with both positive and negative outcomes, to be objectively correlated through anonymous surveys. The large number of participants should include a diverse population encompassing all levels of each organization, and an objective method of classifying participants (prior achievements, education levels, character/integrity, etc.). According to Battistelli et al. (2013), more research should be conducted on the function of motivation and the self-determination theory (SDT) in organizational citizenship behavior (OCB). This can then be generalized across disciplines and practiced.

From a kinesiology perspective, Sargent-Cox and Anstey's investigation (2015) concluded that having an external locus of control can result in shorter longevity. Examining those with an identified external locus of control and developing a technique to encourage the development of holding oneself accountable for their health to improve stereotype expectations and longevity could prove valuable to future research. Similarly, Henninger, Whitson, Cohen, and Ariely' research (2012) proved a correlation between weight and locus of control. Future research could include taking overweight subjects and use an intervening method to see if they could recognize the benefits of owning their weight and potentially losing it. Lastly, the study of Hutcheson, Fleming, and Martin (2014) demonstrated the relationship between locus of control and positive health. The same intervening methodology could also be used here for future research.

An interdisciplinary (specifically psychology, kinesiology, sociology, among others) approach would include Hutcheson et al. (2014), suggesting additional research between psychosis and locus of control. Matheson (2015) suggested future research could include the factors that impact self-regulatory efficacy and abilities. Advancing these concepts, future research to potentially train those with external locus of controls to hold themselves more accountable could improve many aspects of their life as the above research has demonstrated.

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Manuscript submitted: ***May 16, 2018***
Manuscript revised: ***October 19, 2018***
Accepted for publication: ***November 21, 2018***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 54-66
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1869007
© ISSN: 2166-2681

Masterliness: The Challenge for Professional Development

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ABSTRACT

Typical characteristics of Master's-level education usefully complement the development of professional attributes leading to improved outcomes for those professions. These include critical reflection on one's own practice, scholarship and research, and also that of others. This requires access to and engagement with a well-organized and verified corpus of research-based evidence to support improved practice and scholarship. Taking an interdisciplinary approach from the viewpoints of the teaching and midwifery professions, we argue that access to well-designed Master's-level curricula should form the basis of initial and continuing professional development for all professional practitioners, and that these curricula should be informed by research and linked directly to practice. Additionally, we propose that information and communications technologies, including social media, should better be used to facilitate access to both Master's-level education and its underpinning evidence bases, thereby enabling continuous updating and enhancement activities to be accessible to busy professionals.

Keywords: *evidence base, masterliness, professional development, research-informed practice*

Is it possible to be a professional and not demonstrate mastery, or vice versa, or are the two notions inextricably linked? This paper explores the extent to which Master's-level qualifications are a requirement for all working in public-facing professions. There is emergent, but compelling evidence that the quality of the activities of professionals is directly linked to the quality of outcomes for users of those professional services, be they pupils, patients, or clients (see, for example, Barber and Mourshead, 2007; Opendakker and van Damm, 2000; Cotterill-Walker, 2012). We question here why it is that some professions, such as medicine, dentistry and the law, do not routinely offer specialist education at Master's level following initial qualification in the way that others, for example, teaching, nursing and midwifery do, while reviewing the effectiveness of their Master's-level programmes in enhancing good practice and improving outcomes for end-users.

We start by clarifying the terms used relating to professionals, professionalism, professionality, mastery, masterly and masterliness. Following discussion of what it is to be a master and a professional this paper considers the implications for professional development. Seen through the lens of professions that offer Master's-level qualifications for career advancement, we discuss the relevance of and the need for a step change in thinking and action at Master's level and how this translates into practice. We consider the implications for the professions if masterly qualities are not integrated into practice and policy. Finally, we consider the global challenges of professional knowledge generation and exchange.

MASTERY AND PROFESSIONALISM

Hoyle (1975, p. 315) distinguishes between professionalism:

> "…those strategies and rhetorics employed by members of an occupation in seeking to improve status, salary and conditions…"

and professionality:

> "…the knowledge, skills and procedures…that are used by professional practitioners in their work",

the sense in which we use 'professional' in this discussion.

In both the health and education professions, expertise and specialist knowledge are fostered through Master's-level education programs studied in conjunction with a higher education institution (HEI) (Gerstel et al., 2013). An example from education in the UK was the Master's in Teaching and Learning (MTL) promoted by the Labour Government (Department for Education, 2009), which placed an emphasis on teachers researching their own practices.

Helpfully, Sockett (1993) defines four characteristic dimensions of professionalism: community, knowledge, accountability and ideals. We argue

that these dimensions additionally develop an individual's positive attitude towards 'through-career learning'. Professional learning is placed on a par with academic learning, and research becomes a tool for theorizing and developing professional knowledge and practice, thereby creating active communities of practice within each professional specialty.

Reflective practice in teaching, nursing, midwifery and other healthcare professions involves making connections between knowledge and practice under the aegis of an experienced professional (Schön, 1983), a process which is inculcated throughout teaching, nursing and midwifery training. Novices' experiences of reflective practice (Argyris and Schön, 1996) within a community of practice (Wenger, 1998) are known to influence their developing professional identities. Within nursing and midwifery, reflection in action and critical reflection are the hallmarks of experienced professionals (Somerville and Keeling, 2004). Yet it could be argued that at Master's level, the emphasis in nursing and midwifery (Cotterill-Walker, 2012) and teaching (Totterdell et al., 2011) should be less on reflective practice *per se* but more on analytical thinking and decision-making.

Those aspiring to professional leadership build on previously acquired skills, knowledge and experiences to enable them to develop strategic leadership qualities. The challenge for providers of Master's-level education is to identify the important elements of leadership and management, and then design an appropriate curriculum that enables the professional development of future leaders from within that profession. For example, one 20-credit module of the Plymouth University Master's in Teaching and Learning degree specifically focused on Leadership and Management. By concentrating on identifying leadership values, principles and vision, and by exemplifying impacts on individual practice, effective teaching and learning strategies within the classroom, and the wider school and national context, students can better understand the broader context of their immediate role (Bush, 2003; Law and Glover, 2000; Tomlinson, 2004). Emphasis is placed on the role of the practitioner in supporting the management of innovation and change in the classroom alongside senior management decision-making processes. The challenge for Master's-level curriculum designers is to discern whether this is of sufficient 'masterliness' (a concept discussed below) both to provide an adequate foundation for such progress and the springboard to inspire individuals to leadership roles.

Although the work of Schön is not without its critics (Gilroy, 1993; Newman, 1999), reflective practice to develop and improve critical and contextualized professionalism remains a defining characteristic of effective professional development. Possessing general and specialized knowledge and skills, together with theoretical, practical and technical understandings that are not normally possessed by lay people, are seen as essential features of professionalism. To take an example from the teaching profession, Shulman's work on teachers' knowledge bases is well documented, for

example by Bennett and Carré (1993), and has been debated and refined over 30 years. According to Shulman (1987), the main categories of knowledge the effective teacher must gain are:

- subject knowledge, both syntactic and substantive;
- pedagogic knowledge, i.e. general principles of teaching, such as lesson planning, class management, etc;
- pedagogic content knowledge, i.e. that knowledge about how to teach a particular concept or topic;
- curriculum knowledge;
- knowledge of learners;
- knowledge and understanding of educational contexts, local, regional and national.

UK teachers have to master over one thousand professional concepts to be awarded Qualified Teacher Status (Capel, et al. 2016). Within healthcare, nurses and midwives need to meet a similarly high number of required standards for both practice and academia set by the Nursing and Midwifery Council (NMC) for England, Wales, Scotland and Northern Ireland and the HEI providing the educational program (Nursing and Midwifery Council, 2011a). These standards exist to safeguard the health and wellbeing of the public and to ensure that nurses and midwives provide high quality healthcare throughout their careers. Managing the burgeoning and dynamically changing knowledge-base in any profession, particularly in relation to how these issues are informed by current research, is one of the great challenges for professional development.

Professional accountability processes vary between countries, and are generally characterized by increasing regulation, scrutiny by inspection and statutory reporting duties. In nursing and midwifery there are post-qualification registration requirements for practitioners to maintain their competence through continuing professional development (CPD). UK nurses and midwives are required to document their practice and educational activities to maintain their registration (NMC, 2011). Many other nations, including Australia and New Zealand, have similar requirements (Nursing and Midwifery Board of Australia, 2010; Cotterill-Walker, 2012). HEI educators in the clinical professions in the UK are judged on both the educators' newly qualified students' workplace performances and the impact, significance, originality and rigor of their research through the system for assessing the quality of research in the UK, the Research Excellence Framework (2014).

In terms of ideals, professional disposition also involves the exercise of personal integrity and ethical standards taking into account the multiplicity of the effects of any and every action. Anyone who has engaged in the observation of a professional at work could explain how complex is the range of simultaneous activities in even the simplest of situations. The effects of each activity in a circumstance where professional expertise is being

exercised multiply very quickly to a high level of dynamic complexity. In interdisciplinary contexts, further intricacies ensue. For example, in a complex clinical case the multidisciplinary team could include nurses, midwives, physicians, obstetricians, anesthetists, hematologists, pediatricians, physiotherapists, social workers, and others.

Simultaneously, professionals will be making moral judgements and actions, initiated as a result of their own values, beliefs and professional identities. The issue of professional wisdom, arising from experience and informed by professional judgement, informs the context of the activity, be it a teacher's lesson or a nursing or midwifery consultation. For example, research in Finland (Tirri &Urbani, 2013) has shown that new teachers viewed themselves as accountable professionals, whose task was to teach their pupils the subject matter and also to take responsibility for their holistic education, including pupils' ethical growth.

As a result of the rapid developments in healthcare knowledge there is now an expectation that nurses and midwives similarly manage complex ethical and moral problems within clinical settings and to have a greater understanding of these issues (Rushton and Lindsay, 2008). Although nurses and midwives are deemed professional post-registration, Master's-level education is described as the 'second cycle taught' (Gerrish et al., 2003) and is usually taken by students who have an honors degree. Gerrish et al. (2003) argue that education at Master's level enhances not only the professional status of individual nurses, but also the profession itself.

A current debate in many Anglophone countries is whether initial professional education should be at Master's level. In teaching and healthcare, much work accredited at Master's level involves the development of the quality of criticality, i.e. the ability to analyze, evaluate and justify one's own work as well as the work of others. Two main planks of professional development are identifiable: building the capacity of reflective action and educating the professional-as-researcher. At the crux of these two elements is the idea of knowledge transformation. In education, Shulman (1987) described the pedagogic cycle, which is also relevant to teaching in the nursing and midwifery professions, as starting and ending with knowledge comprehended by the professional. Transformation in health and education where classroom learned knowledge is translated into effective teaching or clinical practice involves:

- preparation: the critical scrutiny and choice of resources;
- representation: a consideration of the key concepts and how they might best be represented, in the form of analogies, examples etc;
- intervention selection: the choice of strategies;
- differentiation: the tailoring of input to users' capabilities and characteristics.

Each turn of this cycle should bring the professional to a new level of comprehension, essentially replicating the research cycle. When formalized,

this demonstrates not only mastery of professional practice but masterly professional activity.

MASTERLINESS

Masterliness can be thought of as being a state of advanced professional critical thinking linked to action and informed by research and evidence. In many professions, not least those of teaching, nursing and midwifery, masterliness is an aspiration of both initial post-graduate professional education and CPD both in the UK and internationally (la Velle, 2013; Gerstel et al., 2013). Practitioners frequently state that their reflective, critical and analytical thinking improves following completion of their Master's-level degree (Gerstel et al., 2013; Sorensen and la Velle, 2013). There is ample evidence of the effectiveness of m-level initial education for teachers internationally. Flores et al. (2016), addressing the issue of teacher-as-researcher in a university-based Portuguese ITE master's program, report the emergence of an enquiry based culture during trainees' practicum. In Australia, McLean Davis et al. (2013) describe a master's-level ITE initiative characterized by the development of skills of interventionist practice, high-level analytic ability and capacity to generate and use data and other evidence to address the needs of individual learners. This so-called clinical approach to the education and training of new teachers demonstrates not only the professional characteristics of knowledge bases, the importance of both teacher action and a community of practice, but also the centrality of clients (patients/pupils), the exercise of clinical and ethical judgement and use of evidence in practice. Linking theory and practice in this way, the highly successful Melbourne-based Master of Teaching qualification exemplifies the notion of teaching as an intellectual and moral activity of the highest order of professionalism. Although evidence is relatively thin, a review of the literature exploring possible linkage between post-graduate nursing education at M-level and improved patient care (Cotterill-Walker, S., 2012) concluded that personal and professional qualities inculcated through such courses may have a direct benefit on patients.

We therefore argue that the acquisition of masterliness leads to increasing professional empowerment, expertise and autonomy, and crucially increases professional and personal confidence (Watkins, 2011). However, masterliness can only be acquired through the freedom afforded by professional autonomy within empowering frameworks of professional development. This particularly applies when there is collaboration between praxis placement practitioners and university academics for professional knowledge generation. In this, the role of research, as a component of professional practice on a day-to-day level, and as a generator of the evidence that will improve practice and inform policy, is central. In terms of UK and international provision of Master's-level education, there is considerable curriculum convergence of these elements of masterliness. This enables the highlighting of good practice, and the illumination of the essential

characteristics of professional masterliness, aiming continuously to improve outcomes. Observable outcomes following Master's-level education can include enhanced knowledge and skills and behavioral change. Zwanikken et al. (2013) discuss outcomes noted following Master's-level programs undertaken by healthcare professionals and report that those most frequently cited include improved leadership skills, better job performance and improvements in clinical care. Hence the synergy between masterliness and professionalism can be strongly argued and evidenced.

The model of initial and continuing professional education described above can be seen as a traditional apprenticeship. Levine (2006, p. 81) has defined exemplary professional education programs as those that "integrate and balance academic and clinical instruction", where "field experience is sustained, begins early and provides immediate application of theory to real [professional] situations". Furthermore, a close connection should exist between professional education programs in HEI and praxis placements, crucially including close and ongoing collaboration between the academic and clinical facilities. Commonly, HEI lecturers take responsibility for the academic elements of the course, including assessment of extended pieces of writing, and the practice supervisor assumes responsibility for assessing progress in clinical skills. The use of the word 'clinical' in describing practice-based professional education should be understood to apply not just to the healthcare professions, but to all those that exemplify the characteristics of masterliness, identified by Alter and Coggshall (2009), in Table 1.

Table 1:
Characteristics of Masterly Clinical Professionalism, after Alter and Coggshall (2009)

Clinical Practice Characteristics	**Characteristics of Masterliness**	**Examples from Practice**
Centrality of users Clinical practice involves the direct observation and treatment of users of that profession, e.g. pupils, patients, or clients	Integrity; recognition of values; exercise of moral judgement	Subject specialist teachers taking responsibility for the co-, extra- and pastoral- curricula
Knowledge domains The work of clinical practice professionals is highly complex, requiring general and specialised knowledge and skills as well as theoretical, practical, and technical understandings not possessed by lay people	Level and complexity of range of professional knowledge bases	Nurse- or midwife-led specialist clinics In planning lessons, teachers draw on their repertoires of pedagogic content knowledge in order to transform what they know into something that is learnable by the pupils

Use of evidence and judgement in practice In clinical practice professions, determining the best course of treatment requires knowing an individual client (through observation, questioning, and other diagnostic or evidence collection techniques) as well as knowing what research has shown to work with other clients in similar situations	Criticality; research-informed practice	Diagnosing a condition, referring for appropriate diagnostic investigations and if required, referring to other specialists Teachers exercising skills of differentiated provision for pupils when preparing to teach
Community and standards of practice Clinical practice professions form a professional community that monitors quality, distributes knowledge, and creates standards of practice Professionals and professional organisations, including training institutions, are held accountable to these standards of practice	Joining the 'discipline club'; Master's as ticket into professional club	Membership of specialist committees related to clinical experts of the nurse and midwife Subject associations for teachers
Education for clinical practice Prior to being granted full access to practice, clinical professionals must successfully complete rigorous academic and practical training. Candidates must learn to work effectively with clients, obtain a high degree of knowledge, understand how to use evidence and judgement in practice, and comprehend and value the standards of their respective professional communities	Acculturation; acquisition of professional identity; becoming autonomous	Becoming an independent/ consultant practitioner HEI-based initial professional education

CHALLENGES FOR THE PROFESSIONS

The pursuit and encouragement of masterliness within professional development faces several generic challenges. Firstly, a balance must be struck between professional accountability and professional autonomy, which if unstable can threaten the status of a profession. For example, in the UK teachers have at times felt de-professionalized as a result of over-prescription of the National Curriculum, constraining their pedagogic and curricular decision-making in order to comply with inspection regimes. Similarly, for nurses and midwives in the UK, two major reports have influenced both education practice and clinical supervision in. The Francis Report (2013) was a directive that examined the causes of the failings in a UK hospital where

healthcare professionals gave substandard care even at the most basic level; and the Morecombe Bay Investigation (Nursing and Midwifery Council, 2011) concluded that the deaths of babies in hospital had occurred as a result of missed opportunities to provide evidence-based care for the mother and her baby. Both these reports addressed the need for accountability in relation both to patient care and professional practice.

A second challenge arises from the need to personalize professional action, which has assumed increasing importance in recent years. In response to well-publicized examples of malpractice, sub-standard care and the raising of benchmarks for minimum standards of care to be given by nurses and midwives, HEIs have included basic skills assessments in their curricula in addition to the development of interventionist practices, high-level analytic ability and capability in the use of data and evidence to address the needs of individual recipients of the relevant professional services (Gijbels et al., 2010) This shift in approaches to the education and training of new professionals requires not only the masterly use of knowledge bases and professional action, but also the recognition of the centrality of clients (pupils, patients, and service users), the exercise of clinical and ethical judgement and the use of sound evidence in practice.

A third challenge is that of making credible links between theory and practice as an essential activity of a masterly professional who uses grounded research-informed practice. Translational research in medicine often has the strap-line 'from bench top to bedside', meaning that research carried out in the laboratory can be translated directly into effective treatment for patients. This idea has currency in some other professions, so for those without a conduit for translational research, this is a pertinent and very important challenge. Where research lays down the foundations for professional theory, it can have immediate relevance and impact. In science, basic research carries on filling in the missing pieces of the jigsaw, but research into professional practice and policy can all too often be seen to lack significance. The challenges of undertaking action research as part of professional practice, identifying areas where research is needed and scaling up localized research efforts, are all matters of urgency both for individual professional development and that of the whole profession.

These challenges may have some promise of solution through digital futures. For example, the healthcare professions have a world-class resource, The Map of Medicine (2014), making the latest research evidence easily accessible to healthcare professionals on a global scale. This approach could be adopted for other professions, although there are considerable cost implications and significant gaps, not easily bridged, between the basic research and use in practice arising from the complexity and contextual nature of much of the evidence base. Efforts are underway to produce a similar translational research resource for education practitioners, for example Mapping Educational Specialist knowHow (MESH, 2014), where the evidence base of learning in teaching is being presented as specifically

situated professional knowledge that is easily transferred between contexts (Ovenden-Hope et al. 2014).

The information revolution has not only enabled instant access to web-based information, but has also facilitated its provision, accelerated by the affordances of social media, such as Twitter, Facebook, Instagram, etc. Two decades ago that this aspect of internet use was described as a 'poisoned garden' (Baggott et al., 1997), with the recommendation that educationalists provide 'walled' versions of the 'garden' for learners to browse in safety. The rise of our cyber life in the last twenty years has seen an almost unimaginable burgeoning of increasingly polarized delights and hazards to be found in that 'garden', the protective walls of which have become porous. Much has been written by way of advice in separating and safeguarding one's personal and professional digital identity, (e.g. Pinola, 2016; Hanson, 2013) not least in the healthcare (Peate, 2015) and teaching (Childnet International, 2015) professions. It is beyond the scope of this article to discuss this multi-faceted issue in more detail, suffice to say that public-facing professional mastery requires acquisition and exercise of skills and discernment in the use and generation of the professional knowledge base.

CONCLUSIONS AND RECOMMENDATIONS

In this paper we have argued the case that typical characteristics of Master's-level education usefully complement the development of the kinds of professional attributes that effectively contribute to improved outcomes for end-users of the professions we share, particularly critical reflection on one's own practice, personal scholarship and research, and also that of others. This requires access to and engagement with a well-organized and verified corpus of evidence-based knowledge to support improved practice and scholarship of the kind that can be fostered within Master's programs. We therefore recommend that access to well-designed Master's-level curricula should form the basis of initial and continuing professional education for all professions that engage with end-users, and that these curricula should be informed by research-based evidence and linked directly to practice. Additionally, we propose that information and communications technologies, including social media should be better used to facilitate access to both Master's-level education and its underpinning evidence bases, thereby enabling continuous updating and enhancement activities to be accessible to busy professionals. If these three recommendations were to be adopted, we are convinced there would be value both for the professionals themselves and for the people they serve.

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Manuscript submitted: ***May 3, 2018***
Revision received: ***October 6, 2018***
Accepted for publication: ***November 20, 2018***

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 67-77
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1869621

Structural Equation Model of Students' Competence in Mathematics among Filipino High School Students

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ABSTRACT

This study aimed to construct structural equation model of students' competence in mathematics through selected students profile variables. The structural model revealed interesting influence of the profile variables to the competency in mathematics. It can be conveyed that better mother's work status, higher educational level expected to complete, more confident and did not repeat kinder, have better competency in mathematics. The four variables that directly influenced the competence variables were also influenced with other profile variables such as family background. The family background and confidence level consistently had the highest total effect and indirect effect to the competence in mathematics. Hence, this model can serve as a guide in making programs in the classroom or curriculum in mathematics.

Keywords: confidence in mathematics, family background, mathematics achievement, mathematics performance, path analysis

The importance of mathematics beyond the four corners of the classroom is undeniable. Jain and Downson (2009) stated that the various function of mathematics particularly for mental and logical growth of students was basic for fundamental sciences and engineering courses. It was also mentioned that mathematics was given special attention in terms of educational system all over the world. Studies were conducted to improve mathematics education (Khine, Al-Mutawah & Afari, 2015) and to prepare individuals in the challenges and complexities in their lives particularly in making well-grounded decision by applying logical and mathematical reasoning (Bokar,

2013). Mathematics is applied in people's daily lives because of its functions in real life such as counting, computing sales, measuring dimensions and many more (Mariano, 2004 as cited by Valdez, 2016; Valdez & Guiab, 2015). Its importance was emphasized as early as primary school and it was described as a key component of the primary school curriculum (Zhao, Valcke, Desoete, & Verhaeghe, 2011).

Efforts were made to understand the factors that might influence students' achievement in mathematics. Regression analysis was used to determine predictors of mathematics achievement, performance or competence (Gurat & de Gracia, 2016; Valdez, 2016; Valdez & Guiab, 2015; Visser, Juan & Fezza, 2015; Maree, Aldous, Hattingh, Swanepoel & van der Linde, 2006; Geary, 2011; Zhao, Valcke, Desoete, & Verhaeghe,2011). Factor analysis was also used in exploring factors that influence students to do mathematics (Dimakos, Tyrlis & Spyros, 2012). Also, correlation analysis involving direct and indirect factors was done (Guven &Cabakcor, 2013). On the other hand, some studies also used structural equation model in determining factors that might influence mathematics performance or achievements (Khine, Al-Mutawah & Afari, 2015; Leung, 2001; Yurt & Sunbul, 2014; Gokce, 2005). Structural Equation Modeling is a multivariate statistical model (Drton, 2016) that combines path, an extension of regression analysis and factor analysis (NC State University, Humanities and Social Sciences, as cited by Gokce, 2005). On the studies conducted using structural equation model, mathematics achievement was influenced significantly by affective factors (Khine, Al-Mutawah & Afari, 2015). It also mediates in mathematics teaching self-efficacy together with learning approaches (Leung, 2001). Other factors were mathematics self-efficacy, spatial ability, and problem solving and reasoning skills also affects mathematics achievement (Yurt & Sunbul, 2014). Socio economic status and teacher centered activities have also a positive impact on the mathematics and geometry achievement. Moreover, the more positive perception of success and interest towards mathematics and science are, the higher the scores in mathematics and geometry. Yet, student centered activities were negatively correlated with mathematics and geometry (Gokce, 2005).

The achievement of students in mathematics was measured through Programme for International Student Assessment (PISA). Some studies used the result obtained from the assessment to explore factors that might influence mathematics. İş (2003), as cited by Gokce (2005) modeled the data of Brazil, Japan and Norway in PISA to obtain the factors affecting mathematical literacy of 15 years old students. The study revealed that factors that influenced mathematical literacy were the students themselves, the families and the school. In addition, the attitude towards mathematics was found to be inversely correlated with mathematics literacy. The need to conduct studies that aimed to improve mathematics was revealed through the result in PISA. Philippines did not yet join this International Assessment. However, the result on mathematics achievement test as revealed in the Trends in International

Mathematics and Science Study (TIMSS) showed low achievement score of the Filipinos, 23rd out of 25 participating countries and 34th out of 38th countries in fourth grade math and eight grade mathematics respectively. (Gonzales, Guzman, Partelow, Pahlke, Jocelyn, Kastberg, & Williams, 2004).

Hence, with the limited studies on the use of structural equation model to determine factors that affects mathematics, factors explored that do not consider personal characteristics, other school-related experiences, family background and views and confidence on mathematics all together and the poor performance in mathematics, urged the need to conduct this study on structural equation model of students' competence in mathematics among Filipino high school students using the publicized PISA test.

RESEARCH METHOD

This study employed quantitative research design. The data in the study was from the data used by Gurat and de Gracia (2016) in exploring the predictors of students' competence in applying mathematics in real world problems. The data was obtained from fourth years students (grade 10) of selected high schools in Nueva Vizcaya. The instrument used in gathering was the publicized PISA Mathematics Test with Cronbach alpha coefficient of 0.875. The instrument underwent pilot testing before it was given to the student respondents. Communication letters were given to the authority of the schools. Upon approval, data gathering was scheduled. Students were given 45 minutes to 1 hour to answer the questionnaire and calculators were not allowed. All grade 10 students composting of 191 were enrolled and present during the conduct of the study in the recognized Engineering and Science Education Program (ESEP) and Philippine Science high school in Nueva Vizcaya were the respondents of the study answered the research instruments. Analysis of MOment Structures (AMOS) was used to construct structural equation model of students' competence in applying mathematics in real world problems. AMOS is an extension of the general linear model (GLM) that enables a researcher to test a set of regression equations simultaneously.

RESULTS

As gleaned in Figure 1, the Structural equation model of students' competence in applying mathematics in real world problems fits the model, $\chi 2(63)=79.213$, $p > 0.05$. The variables that directly affect students' competency in applying math in real world problems are mother's work status, highest level expected to complete, level of confidence in math and repeated kinder. Skipping classes is the only variable that directly affects repeated kinder. Tardiness and view on math directly affect the students' level of confidence in the subject. Figure 1 shows the structural equation model of students' competence in mathematics.

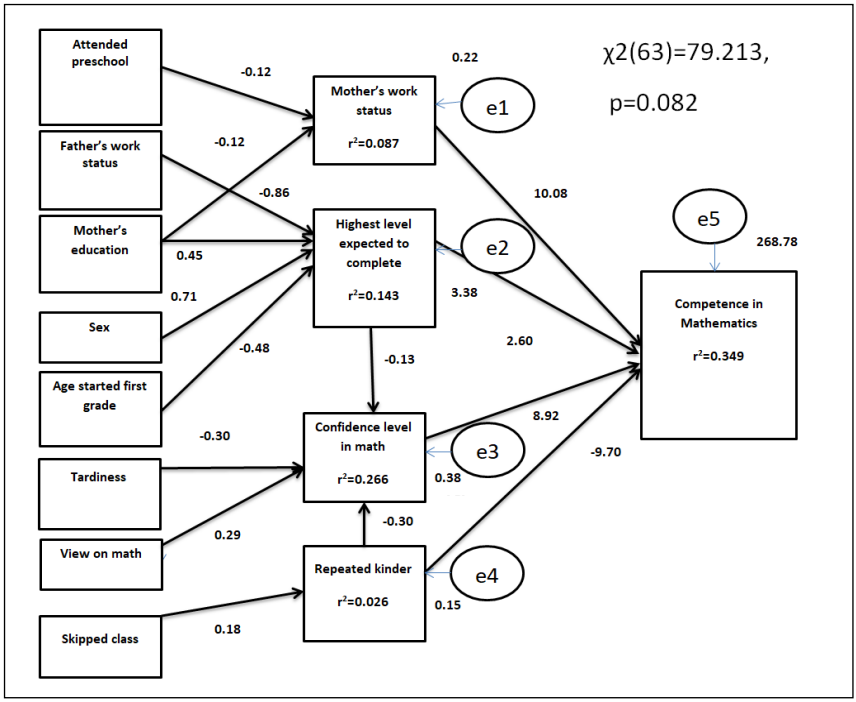

Figure 1. Structural equation model of students' competence in mathematics

Whereas, age started first grade, sex, mother's education and father's work status directly affect the highest expected level of completion. Mother's education and attendance to preschool directly affect mother's work status. Furthermore, variables such as highest level expected to complete and repeated kinder directly affect the level of confidence in mathematics. The figure also reveals that mother's work status, highest level expected to complete, confidence level in math, and repeated kinder have coefficient of determination (r^2) of 0.087, 0.143, 0.266, and 0.026 respectively. This indicates that 8.7%, 14.3%, 26.6% and 2.6% of the variances were accounted to mother's work status, highest level expected to complete, confidence level in math, and repeated kinder respectively.

These four variables were the identified predictors of competence in Mathematics in the study of Gurat and de Gracia (2016). Factors such as mother's education, father's or mother's work status or family background in general is supported by Egalite (2016) who identified factors such as family education, income, criminal activity and family structure that might influence students' achievement in general. Dimakos, Tyrlis and Spyros (2012) also reported that students' fathers and their mothers were among the factors that influence students to do in Mathematics. The influence of level of confidence

to mathematics and mathematics achievement is supported by Mohd, Mahmood, and Ismail (2011). However, Mettas, Karmiotis and Christoforou (2006) revealed the association of attitudes and achievement but disconfirmed the association of self-confidence or self-beliefs in achievement but this is in science.

The variables e1, e2, e3, e4 and e5 in the model are other possible variables that might influence the variables connected to it. Possible factor that might influence the mother's work status aside from the variables in the model is sense of obligation such as being there for the child and optimizing the child's development and growth. Another factor is negotiating the obstacles such as problems on child's care, father's lack of involvement to the child, and relatives and friends' lack of support for the mother toward securing employment (Youngblut, Brady, Brooten & Thomas, 2000). However, this is the case of a single mother.

Possible factors that might influence students' highest level expected to complete is socio economic status. This is supported by the study of Diemer and Blustein (2007) that career barriers were higher from poor, people of color, women and those who are disabled. Yet in the Philippine concept, possibility would only be true in terms of socio economic status and not for racial or ethnicity. The study of Ali, McWhirter and Chronister (2005) also supported this by revealing in their study that individuals from lower social class were less career-related self-efficacy in terms of vocational aspirations. Others factors are lack of guidance support and the lack of general college knowledge such as information about expectations in college and the application procedures (Temple, 2009).

Possible factors that might influence students' level of confidence in math are teachers' factor, self-efficacy and self-judgement (Marchis, 2011). Nonetheless, the identified teacher factors include teachers' attitude to mathematics, his/her confidence and his/her support to pupil influences attitudes towards mathematics in general and not only in confidence. Other factors are teachers' lack of student motivation and engagement in academic work as considered by Mata, Monteiro and Peixoto (2012) or teacher factor as reported by Dimakos, Tyrlis and Spyros (2012). Possible factor that influence an individual to repeat kinder is parents' decision. Some of the parents' reasons are the child's confidence, self-esteem, readiness and maturity to go to first grade (Circle-of-Moms-editors, 2011). Possible characteristics of the students who repeated kinder are the significantly worse performance compared with late entry in kinder and problem in the concentration of the individual inside the class (National Center for Education Statistics, 2002).

The Table 1 displays the unstandardized regression coefficients. The unstandardized coefficients and the associated test statistics appear in the Table. Each unstandardized regression coefficient represents the amount of change in the dependent or mediating variable for each one unit change in the variable predicting it. This means that for every one unit increase in skipped whole day variable, the repeated kinder increased by 0.18 and for every unit

increase in repeated kinder, the competence score in mathematics is reduced by 9.70. This also means that the students who tend to skip class for whole day also the same student that repeated kinder and those who students who repeated kinder have lower competency in mathematics. This is supported by National Center for Educational Statistics (2012) that students who repeated kinder tend to have significantly worse performance.

Table 1. Regression Weights

Variables			Estimate	S.E.	C.R.	P
Repeated kinder	<---	Skipped whole day	0.18	0.079	2.260	.024**
Competence score	<---	Repeated kinder	-9.70	3.064	-3.166	.002**
Highest level expected	<---	Age started first grade	-0.48	0.230	-2.102	.036*
Highest level expected	<---	Father's work status	-0.86	0.291	-2.935	.003**
Highest level expected	<---	Sex	0.71	0.284	2.491	.013**
Highest level expected	<---	Mother's education	0.45	0.154	2.932	.003**
Competence score	<---	Highest level expected	2.60	0.653	3.981	.000**
Mother's work status	<---	Mother's education	0.12	0.040	3.015	.003**
Mother's work status	<---	Attended preschool	0.12	0.048	2.422	.015**
Competence score	<---	Mother's work status	10.08	2.450	4.113	.000**
Confidence level in math	<---	View on math	0.29	0.074	3.943	.000**
Confidence level in math	<---	Highest level expected	0.13	0.023	5.873	.000**
Confidence level in math	<---	Tardiness	-0.30	0.090	-3.338	.000**
Confidence level in math	<---	Repeated kinder	-0.30	0.114	-2.633	.008**
Competence score	<---	Confidence level in math	8.92	1.806	4.941	.000**

Legend: *significant at 0.05 level **significant at 0.01 level
Note: regressions coefficient of e1 to e5 are significant

The result also shows that for every single unit increase in age started first grade, and father's work status, the highest level expected to complete is reduced by 0.48 and 0.86 respectively. Every one unit increase in variables sex and mother's education, the highest level to complete is also increased by 0.71 and 0.45 respectively. On the other hand, the single unit increase in highest level expected to complete can increase the competence score by 2.60. This indicates that the student who enrolled in first grade at right age, better father's work status, lower educational attainment of the mother and is female student, the lower the educational level the student expects to finish. Yet, the higher the level of educational attainment the student expects to finish, the student has better competency score in math. Mother work's status can also be increased by 0.12 for every unit increase in mother's education and the child attended preschool. Every single unit increase in mother work's status can increase competence score by 10.08. This points to higher education of mother of the child that was sent to preschool, the better the mother's work status and the child has higher competency in math. This is supported by Egalite (2016) that family background can influence achievement of the student. Also, socio economic status influences students' highest educational level he/she expected to complete (Diemer and Blustein, 2007).

Students' view on math and highest educational level expected to complete influence the confidence level in mathematics by 0.29 and 0.13 respectively. Variables such as tardiness and repeated increase can influence confidence level in math by -0.30. The confidence level in math can increase competence score by 8.92. This reveals that if the student has more positive view in math and he/she has higher educational level expected to complete, the more confident the student. However, the more tardy the student and that he/she repeated kinder, the lesser the student's confidence in math. Students who are more confident have higher competency level in math. Influence of confidence level is supported by Mohd, Mahmood, and Ismail (2011).

To see the total effects of each variable to the competence in mathematics, Table 2 displays the total effects to the competence in mathematics.

Table 2. Total Effects to Competence in Mathematics

Variables	Beta Weights
Repeated kinder	-12.37
Skipped whole day	-2.21
Father's work status	-0.34
Attended preschool	1.164
Age started 1st grade	1.84
View on math	2.62
Sex	2.68
Tardiness	2.69
Mother's education	2.93
Highest level expected to complete	3.79
Confidence level in math	8.92
Mother's work status	10.08

As gleaned in Table 2, the highest negative effect is repeated kinder (-12.37) and the two highest positive effects are confidence level in mathematics (8.92) and mother's work status (10.08).

Table 3. Indirect Effect to Level of Confidence and Competence Score in Mathematics

	A	B	C	D	E	F	G	H	I	J
Confidence level in math	-0.11	0.06	0.09	-0.07	-0.05	-	-	-	-	-
Competence score	-3.24	2.93	2.68	-1.84	-2.21	1.19	-2.69	2.62	1.16	-2.67

Legend: A(Father's work status), B(Mother's education), C(Sex), D(Age started 1st grade), E(Skipped whole day), F(Highest level expected to complete), G(Tardiness), H(View on math), I(Attended preschool), J(Repeated kinder)

As shown in Table 3, father's work status, mother's education, sex, age started first grade, and skipped whole day class has indirect effects on confidence in mathematics. The father's work status has the highest indirect effect. The indirect effects of the variables to the competence score range from 1.16 to 2.93 positive direct effects and 1.84 to 3.24 negative indirect effects. Consistent with the indirect effect to confidence level in math, father's work status has the highest negative effect to the competence score and mother's education has the highest positive indirect effect on the competence score.

CONCLUSIONS

Findings revealed that structural model of students' competence in applying mathematics to real-world problems revealed the interesting influence of the profile variables to the competency in mathematics. The structural equation model conveys that:

- Students who have better mother's work status, the higher educational level expected to complete, more confident, and did not repeat kinder have higher competency in mathematics.
- Students who skipped class for the whole day and have repeated kinder have lower competency in mathematics.
- Students who enrolled in first grade at the right age (7 years old), have better father's work status, lower educational attainment of the mother and female, have lower educational level expected to complete. Yet, the higher level of educational attainment the students expected to finish, they have better competency score in mathematics.
- Students who have the mother with higher educational level and better work status, and the students were sent to preschool, the higher the students' competency in math.
- Students who have the more positive view in math and higher educational level expected to complete, are more confident students. However, the tardier the students are and that they repeated kinder, the lesser their confidence in mathematics. Students who are more confident have higher competency level in math
- The family background such as mother's work status, mother's education, and father's work status was consistently the highest in total effect and indirect effect as well as the confidence in mathematics.

RECOMMENDATIONS

Based on the findings of this study, the following are recommended:

- To use this model as a guide in making programs or interventions in the classroom to develop students' competency in mathematics, the

variables with highest total effects and indirect effects may be considered.

- To use the model as a basis for reviewing the curriculum in mathematics. The relationships from the model can be basis for determining factors that might affect the students' understanding in mathematics and can be guide for some adjustment or revisions in mathematics curriculum.
- To conduct a similar study that will involve larger sample size of students.
- To explore other possible factors that influence mother's work status, highest educational level the students expected to complete, the confidence level in mathematics and repeated kinder. Other factors that influence competency in mathematics and not yet in this study can also be explored.

ACKNOWLEDGEMENT

I thank Dr. Rommel S. de Gracia, Senior Research Specialist in Department of Education Division of Nueva Vizcaya for his help in gathering the data needed for this study.

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Manuscript submitted: ***February 8, 2018***
Manuscript revised: ***May 31, 2018***
Accepted for publication: ***July 8, 2018***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 78-86
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1869913

The Intertextualist: Future Teachers, Past Pedagogy, and Dedifferentiation in Multicultural Education

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ABSTRACT

Multicultural education is thought to consist of five dimensions: content integration, the knowledge-construction process, prejudice reduction, equity pedagogy, and an empowering school culture and social structure. Of the five, equity pedagogy is identified as an essential element by leading scholars in the field. Can equity pedagogy alone create the powerful learning experiences needed for multicultural education? This is an important question to consider as conservatism and dedifferentiation challenge multicultural education. If dedifferentiation is a recurring feature that impacts teachers and students, then we need a pedagogy that accounts for its significance. This article explores the ways a pedagogy of intertextuality responds to dedifferentiation and extends equity pedagogy for the development of future teachers and leaders.

Keywords: Activity Theory, Dialogic Pedagogy, Diversity Training, Intertextuality, Multiculturalism

In "Equity Pedagogy: An Essential Component of Multicultural Education," Banks and Banks (1995) discuss the misconception that multicultural education is simply the insertion of content about diverse cultural, ethnic, and racial groups into the general academic curriculum. The absence and presence of diversity in our academic curricula are perennial concerns. However, the pedagogical features of multicultural education do not receive the same level of attention. Shannon-Baker (2018) agrees that if multicultural education is to

remain effective in the face of rapid changes in education and the larger culture, it must be (re)conceptualized and its various dimensions may have to be reconsidered and possibly reconfigured.

According to Banks (2016) as well as Banks and Banks (1995), multicultural education consists of five dimensions: content integration, the knowledge-construction process, prejudice reduction, equity pedagogy, and an empowering school culture and social structure. Of the five, equity pedagogy is identified as an essential element. Banks and Banks (1995) write, "We define equity pedagogy as teaching strategies and classroom environments that help students from diverse racial, ethnic, and cultural groups attain the knowledge, skills, and attitudes needed to function effectively within, and help create and perpetuate, a just, humane, and democratic society" (p. 152). But what exactly makes it essential? Banks and Banks (1995) argue that equity pedagogy creates active learning experiences. It challenges the notion that teachers are depositors of information and the classroom is simply a site for the transmission of facts (p. 153). The authors claim that all teachers need to be able to competently implement equity pedagogy. But should this be the only pedagogy that we are able to implement?

Bernauer and Tomei (2015) and Usher, Bryant, and Johnston (1997) say no, especially for those of us who teach in adult education programs. The essentialism associated with equity pedagogy mirrors the modernist thinking that multiculturalism must continue to avoid. Usher, Bryant, and Johnston (1997) argue that it is the celebration of differences in postmodernism that helps to open spaces and provide opportunities for multiculturalism to flourish (p. 22). Usher and Edwards (1994) clarify the basic relationship between modernism and postmodernism. Postmodernism privileges plurality and appreciates otherness. It disrupts definitions of objectivity, foundationalism, disciplinarity, and scientificity that are often the hallmarks of modernism. When Banks (2016) as well as Banks and Banks (1995) traffic in the totalizing discourse associated with modernist thinking in the name of multiculturalism, we must ask ourselves if we are unintentionally participating in the maintenance of postmodern initiatives trapped in a modernist paradigm. While not always apparent, this paradox raises questions about our ability to adapt our skills and pedagogical strategies in educational systems that are changing constantly in response to social, political, and technological influences (Christensen & Eyring, 2011; Jaschik, 2016). For example, what happens to equity pedagogy as a dimension of multicultural education in the growing push toward online education? As the varying needs of our student populations expand and educational forms diversify, Usher, Bryant, and Johnston (1997) believe that we will see even more changes in terms of our goals, academic structures, curricula, and pedagogy. This constant transformation of our academic landscapes reflects what they call *dedifferentiation.* According to Usher, Bryant, and Johnston (1997), "dedifferentiation implies a breakdown of clear and settled demarcations between different sectors of education and between education and cognate

fields" (p. 23). As a feature of postmodernism, dedifferentiation is an inherently disruptive process. Christensen and Eyring (2011) argue that this kind of disruption has brought us to a critical crossroad in higher education and hanging on to past practices can imperil the future. As dedifferentiation continues, we must be able to adapt and innovate accordingly (Usher & Edwards, 1994; Christensen & Eyring, 2011; Shannon-Baker, 2018). More importantly, Usher, Bryant, and Johnston (1997) argue that dedifferentiation means that education can no longer monopolize learning, since enterprises and activities in many contexts can be deemed educational. The authors believe that "it is clear that dominant conceptions of knowledge, curricula, and pedagogy are in drastic need of rethinking" (p. 24).

To begin this rethinking process, I propose that we supplement equity pedagogy in the five dimensions of multicultural education with a *pedagogy of intertextuality.* A pedagogy of intertextuality accounts for the impermanence, heterogeneity, and interconnectedness that are common features of postmodern education. As a metaphor for interrelatedness and disruption, intertextuality has much to teach educators and our increasingly diverse student body. In this theoretical assessment, I revisit the genealogy of the concept of intertextuality as a way to acknowledge the importance of its origins in the dialogism of the Russian philosopher Mikhail Bakhtin and its appropriation by the French theorist Julia Kristeva. This overview provides the framework that reveals the ways in which intertextuality mirrors dedifferentiation and extends our understanding of equity pedagogy in multicultural education. I conclude by outlining the key features of a pedagogy of intertextuality that will help us to develop the teachers and leaders we need now and in the future.

THE ORIGINS OF INTERTEXTUALITY

In their historical reviews of intertextuality, Worton and Still (1990) and Alfaro (1996) trace the idea of intertextuality back to the writings of the ancient Greek philosophers. Many of these early philosophers anticipate the figure most central to our contemporary notion of intertextuality. Alfaro (1996) claims that it is in the work of the language philosopher Mikhail Bakhtin that we find the origins of intertextuality as it is commonly conceptualized today. According to Alfaro (1996), "What can uneasily be called 'Bakhtin's philosophy' is a pragmatically oriented theory of knowledge, one among other modern epistemologies that seek to grasp human behavior through the use we make of language" (p. 272). The umbrella term for Bakhtin's philosophy is *dialogism.* Dialogism represents the different ways in which Bakhtin meditates on dialogue as a fundamental feature of language and as a modeling system for human existence and representation (Holquist, 1990, p. 33). Key to Bakhtinian thought is the understanding that dialogue mediates the interrelations of meanings between parts and wholes as well as sameness and difference. According to Bakhtin (1984), "Language

lives only in the dialogic interaction of those who make use of it. Dialogic interaction is indeed the authentic sphere where language lives. The entire life of language, in any area of its use (in everyday life, in business, scholarship, art, and so forth), is permeated with dialogic relationships" (p. 183). In dialogism, languages intersect with one another in a variety of ways and they do not exclude. Bakhtin (1981) insists that "The word in language is half someone else's" (p. 293).

According to Orr (2001), Julia Kristeva is credited with introducing Bakhtin's ideas to Western audiences (pp. 24-28). However, Alfaro (1996) warns that it is important to note the distinctions between Bakhtin's and Kristeva's contribution to intertextuality. She writes, "Bakhtin's emphasis on the historical uniqueness of the context of every utterance distances his terms from the endlessly expanding scope of intertextuality. In Kristeva's usage, the intersection of textual surfaces in a literary word can never be circumscribed; it is open to endless dissemination" (1996, p. 276). Bakhtin scholars in America often complain that Kristeva misrepresents Bakhtin's ideas (Morson & Emerson, 1990). One result of this criticism has been the proliferation of interpretations of intertextuality. Orr (2001) and Alfaro (1996) review the contributions provided by theorists such as Todorov, Culler, Genette, Riffaterre, and Barthes. Both acknowledge that all of these theorists are somewhat indebted to Kristeva. These theorists either criticize or co-opt the innovation that Kristeva builds on the foundation established by Bakhtin. Echoing Bakhtin, Kristeva (1986) tells us that dialogism characterizes writing as subjective, communicative, and intertextual. In one of her earliest appropriations of Bakhtin, Kristeva (1986) claims, "each word (text) is an intersection of word (text) where at least one other word (text) can be read… any text is the absorption and transformation of another" (p. 37). Kristeva (1984) rebrands intertextuality as *transposition* because intertextuality was being oversimplified as the study of the interrelationship of sources (pp. 59-60).

In Kristeva's world view, intertextuality has greater significance and implications. Texts represent language as both a signifying process and a sociocultural process. Human identities are caught up in the same processes as texts. In fact, one is an extension of the other in postmodern thought (Kristeva, 1984, pp. 55-56; Payne, 1993, pp. 180-181). The transformation of the human subject using a reinterpretation of texts serves as the impetus and foundation for Kristeva's semiotics. Semiotics is the study of meaning-making using language as a sign system. It helps us to understand the many ways in which our realities and practices are all social constructions. These social constructions behave like language and texts (Scholes, 1985, p. xi; Shotter, 1993, p. 26). *Semiotics* becomes the term that Kristeva adopts and adapts in order to characterize the disruption, signification, and possibilities found in the reconfiguration of one sign or text into another. To define this continuous integrative and transformative process, Kristeva (1984) uses the terms *symbolic* and *semiotic.* Grounding her terms in the tradition of psychoanalysis, Kristeva (1984) claims that the symbolic and the semiotic are

inseparable. They are two features of the same process. The symbolic relies on fixed meanings and the hierarchical structures associated with modernism. However, the semiotic is the opposite of the symbolic. It celebrates the multiplicity and heterogeneity underpinning postmodernism. For Kristeva (1984), the semiotic revises and remodels the symbolic (p. 62). The heterogeneity of meaning—like the inherent dialogism in texts—provides the semiotic with the capacity to disrupt the power of the symbolic and all of the hierarchies, oppositions, and dominating structures that it represents in society (pp. 69-71). In other words, the semiotic acts as an agent that is always in a position to challenge and change the symbolic, giving the semiotic the kind of political power and pedagogical influence that can help us to create more freedom for humans and a better and more equitable society (Kristeva, 1984, pp. 80-89; Payne, 1993, p. 180).

A PEDAGOGY OF INTERTEXTUALITY

What often gets lost in the criticism and the complexity surrounding Kristeva's conceptualization(s) of intertextuality and semiotics is that she sees the text as a form of practice. For Kristeva, the text is the embodiment of the idea of intertextuality and its transformative processes. In intertextuality, theory and practice are inseparable because they are two phases of the same constructivist process. Texts disrupt and they deconstruct. According to Payne (1993) and Scholes (1985), texts are always and everywhere a force for social transformation. They characterize what Bernstein (1990) describes as the inner logic of pedagogic practices. In his study of pedagogic processes, Bernstein (1990) concludes that the production, reproduction, and overall transformation of culture are essentially relational and pedagogical. Pedagogy is an example of social and cultural relations (pp. 64-65). These relations are mediated through texts. Refusing to attach itself to an established order, the text fosters linguistic, social, and cultural changes simultaneously (Kristeva, 1984, p. 180). When texts are constructed in the process of intertextuality, a new space opens to make room for another text that is a response to the prior text. This is the fundamental logic associated with the kind of practices that are needed to maintain equitable social relations. "In calling the text a practice," Kristeva argues, "we must not forget that it is a new practice, radically different from the mechanistic practice of a null and void, atomistic subject who refuses to acknowledge that he is a subject of language" (1984, p. 210).

Our use of language reminds us that we are always adapting, interpreting, and responding in an endless process of (inter)textualization or what is simply called reading and writing in activity theory. While not a dominant theoretical perspective among educators, activity theory presents us with an important understanding of intertextuality as a theory of learning (Shotter, 1991, 1993). Activity theory is influenced by the Soviet psychologist Lev Vygotsky, a major contributor to constructivism. For Vygotsky (1978),

language shapes human activities into structures that can be reshaped repeatedly depending on contexts (p. 28). Because the contexts for human activities are always changing, Vygotsky says that the tools for learning also change. His work is viewed by some scholars as an "important predecessor and perhaps even as clinical underpinning to Bakhtin's philosophy of language" (Emerson, 1986, p. 27). From the perspectives of Vygotsky and Bakhtin, language must always play a central role in the articulation of any theory of learning. Russell (1995) agrees when he explains that an active theory of learning focuses on the interconnections among language, human behavior, and consciousness in an activity system. Activity systems are goal-oriented, contextual, situated, cooperative, and interactive. As a fundamental unit of analysis for understanding culture and people, activity systems help us to connect the psychological and social processes that constitute and condition both (p. 53). Russell (1995) identifies the interactive elements of activity theory as a performative system: "subject (a person or persons), and object(ive) (an objective or goal or common task), and tools (including signs) that mediate the interaction" (p. 53). Also, Russell (1995) claims that there are, arguably, five important constituents involved in this system. He writes, "Activity systems are historically developed, mediated by tools, dialectically structured, analyzed as the relations of participants and tools, and changed through zones of proximal development" (p. 54). Mediational tools could include actual tools, computers, speaking, reading, writing, music, architecture, and physicality (p. 54). Russell (1995) claims that texts are also tools one uses to carry out activities. Just as there are a variety of tools for completing different activities, there are also a variety of texts one can use. As human activities change in complex systems and situations, these texts/tools help us to adapt and transform our environments. Russell (1995) writes, "For those tools that are in the form of texts, meanings almost always arise in relation to previous texts (intertextuality) as well as in relation to nontextual phenomena" (p. 55). In activity theory, learning is situated and contextualized in some kind of system of relations. It is also the result of one's participation in that system.

Another feature of the activity system that Gadotti (1996) believes is important is its dialectical structure. The dialectal structure recognizes that change occurs as a result of conflict and cooperation (Russell, 1995, p. 55). In fact, Gadotti (1996) argues that conflict is an important element in learning theory. Conflict pedagogy acknowledges that all things are in motion and always interrelated and permeated by the regulatory and hierarchical nature of power. For Gadotti (1996), the use of conflict as a teaching strategy is important in any transformative pedagogy. He writes, "the role of the educator is to educate. Educating presupposes a transformation, and there is no kind of peaceful transformation. There is always conflict and rupture with something, with, for instance, prejudice, habits, types of behaviors, and the like" (1996, p. xvi). Yet, equity pedagogy often emphasizes consensus and de-emphasizes conflict, despite the fact that rapid change often undercuts consensus just as soon as it is reached. Gadotti (1996) agrees that an overemphasis on unity and

equality in pedagogy might do more to hinder than help our efforts to understand differences and diversity in various multicultural contexts. Equity pedagogy could benefit from what Shannon-Baker (2018) calls the "additive approach" to multicultural education. Not only should educators be able to connect the past to the present but also one pedagogy to another. Equity pedagogy tends to sever multicultural education from action and discourage intersectional understanding of identity and interaction (Shannon-Baker, 2018, p. 53). As educators, we must learn to be effective mediators. According to Giroux (1992), teaching is a form of mediation between differences. He claims, "we can't be good mediators unless we are aware of what the referents of the mediation we engage in are…. The thing about teaching is that the specificity of the context is always central. We can't get away with invoking rules and procedures that cut across contexts" (Giroux, 1992, p. 17). It is in intertextuality and activity theory that we discover "politics and pedagogy developed around new languages capable of acknowledging the multiple, contradictory, and complex subject positions people occupy within different social, cultural, and economic locations" (Giroux, 1992, p. 21).

CONCLUSION

This discussion presents an alternative perspective on learning theory that may prove to be a useful resource for those who work in various areas of multicultural education. When viewed through a dialogic lens, intertextuality becomes the figurative equivalent of dedifferentiation. Both emphasize the complex nature of all transformations. Transformation creates disruption, but it also presents us with opportunities to improve and to develop new ideas, strategies, and practices for teaching and learning in multicultural contexts. There needs to be a better understanding of the interrelationships among language, change, and democracy in these contexts. Intertextuality offers us a useful approach. A pedagogy of intertextuality is essentially a philosophy of teaching and learning that imagines texts as a metaphor, medium, and method for democratizing culture and society. It is congruent with equity pedagogy in the sense that it supports constructivism and cross-cultural integration. However, intertextuality adds an extra dimension to equity pedagogy. It serves as a paradigm for studying the kinds of complexities that some intersectionalists, interdisciplinarians, and digital pedagogues believe we do not have (Bernauer & Tomei, 2015; McCall, 2005; Newell, 2001). Also, intertextuality recognizes language and impermanence as central features in our understanding of democracy (Hirschkop, 1999). Democracy itself is a form of continuous practice that is intertextual, intersectional, interdisciplinary, and always conflictual. Therefore, we should not downplay conflict and difference in pedagogy. Instead, we must turn them into productive teaching moments that clarify our understanding of difference and diversity from one cultural context to the next. For teaching and learning,

intertextuality depends on the dialogism, consensus, and conflict inherent in all notions of difference and diversity (Graff, 2003; Trifonas, 2003).

In the end, intertextuality is critical praxis. It recognizes learning as reflection and performance. Performance involves adaptation in some context. Like humans, texts perform. They interact and interrelate in the same way people do. Humans are their cultures. They even create their own personal cultures in a process of acceptance, appropriation, and rejection. We are in a continuous process of change as we engage in the various interconnected systems that shape and form our environments and our lives. Intertextuality is a metaphor for this process, and this process is as dialogic and heterogeneous for humans as texts. As a result, intertextuality reminds the equity pedagogue that we do not face the same barriers, social dilemmas, and life chances. We can never accommodate all of the differences and diversities in the community or classroom. However, we can recognize these differences as forms of texts and use them as teaching tools. This is why educators and leaders must be able to negotiate, integrate, and implement a wide variety of pedagogical practices that speak directly to impermanence and heterogeneity in all areas of education and society. Intertextuality is one more strategy that helps us to reach this goal.

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Manuscript submitted: ***August 23, 2018***
Manuscript revised: ***November 8, 2018***
Accepted for publication: ***November 21, 2018***

Peer-Reviewed Article

OJED
OPEN JOURNALS IN EDUCATION

Journal of Interdisciplinary Studies in Education
Volume 7, Issue 1 (2018), pp. 87-101
http://ojed.org/index.php/jise
doi: 10.5281/zenodo.1870179

Communication and Media Education in an Era of Big Data

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ABSTRACT

This theoretical paper argues for the need to review communication and media education curricula in the light of how roles and jobs are undergoing transformation in the communication and media industries wherein work carried out daily is influenced by Big Data analytics and derivations. Educators have to ensure that communication and media students comprehensively understand how and why large-scale data-sets are collected, scrutinized and interpreted for meaning and value to be ultimately applied when generating content. Big Data analytics and derivations need to be more present in contemporary communication and media programs considering how they are impacting on ways of doing and of knowing as well as on the negotiation of value within the communication and media industries.

Keywords: Big Data, communication and media education, communication and media industries.

This theoretical paper proposes an argument for the necessity to review communication and media education curricula in the light of how roles and jobs are undergoing transformation at all levels in the communication and media industries. Big Data are rapidly re-inventing how content is produced in the communication and media industries, as illustrated for instance by the extent to which Big Data-centric phenomena are impacting on elementary aspects of work in television, journalism, advertising and public relations (that are specifically addressed here).

> It seems reasonable to view the gathering and use of big data in the media sector as the latest step in the historical process of the 'rationalization of audience understanding', that dates back at least to the 1930s when communication researchers such as George Gallup and Paul Lazarsfeld began working with media industry stakeholders on more data-driven approaches to understanding and predicting audience tastes and preferences (Napoli, 2016, p.2).

Continuously expanding Big Data as well as the computing methods associated with their collection and processing bear explicit resonance to how the generation of content by the contemporary communication and media industries reflects major current social and professional changes as influenced by technological advances. And this resonance needs to be taken into account in a better way when communication and media programs are taught in higher education contexts.

It becomes indispensable for various aspects pertaining to Big Data analytics and insights to be more effectively integrated into how communication and media programs are taught, so as to nurture in future communication and media professionals the ability to understand, evaluate and apply Big Data insights when investing resources, making creative decisions and producing content. Communication and media students ought to learn how large quantities of information – generated about and by netizens, social media users, online service providers, subscribers, shoppers, and retailers – constitute Big Data which are then categorized, dissected, processed and analyzed. As a result, significant extrapolations, indications and prognostications are derived and subsequently shape funding and the production of content in the communication and media industries.

Many of the ideas and points raised in this paper to develop the proposed argument come from various informal discussions and conversations with senior practitioners in the contemporary communication and media industries. It is acknowledged that, without the application of legitimate scientific methodology, such informal material can hardly be considered as serious validation of the argument proposed here. But the author's understanding of the contemporary state of the communication and media industries has undoubtedly benefited from the above-mentioned informal professional insights – some of which have been incorporated in the discussion – into contemporary industrial practices.

What is 'Big Data'?

In 2017, messaging applications – such as WhatsApp, Facebook Messenger, WeChat, QQ, Viber, Line, Telegram and Kakaotalk – had more than five billion active users monthly (HubSpot Research, 2017). It was not uncommon for the average individual anywhere to have five social media accounts in 2014 (Bennett, 2014) and to be engaging with social media for at least two hours every day by 2017 (Asano, 2017). And in many parts of the world, most people now obtain daily news almost exclusively from social

media platforms like Facebook, YouTube and Twitter (Wagner, 2017). Massive trails of data – that are exchanged, merged and stored (through the use of Apache Hadoop, Microsoft HDInsight, NoSQL, Hive, Sqoop or PolyBase for instance) – are generated by the intense interaction of people with social media networks as well as by their constant Internet activity.

The escalating coupling between social media network sites – for example to maintain a list of favorite TV shows and songs or to share photos – enables large quantities of data generated on the Internet to be exchanged and merged. The pervasive diffusion of apps, social media networks and service subscription sites, accessible 'anywhere-anytime' from increasingly 'smart' mobile appliances, has indeed led to vast amounts of personal data to become available, from: every search and social media reference made, every photograph uploaded or downloaded, every news article read, every positive or negative rating given to any form of creative content, every geographical location, every log in, subscription, payment, song list, textual entry, bookmark, and so on.

As people browse, search, communicate, share and buy throughout any day in a digitized world, each of the devices they use are essentially talking to each other and ultimately creating enormous amounts of structured, semi-structured and unstructured data. According to Richterich (2018, p.7), while

> structured data (such as demographic information or usage frequencies) can be easily standardized and, for example, numerically or alphabetically defined according to a respective data model, unstructured and semi-structured data are more difficult to classify. Unstructured data refer to visual material such as photos or videos, as well as to text documents which are/were too complex to systematically translate into structured data. Semi-structured data refer to those types of material which combine visual or textual material with metadata that serve as annotated, structured classifiers of the unstructured content.

In 2012, there was a thousand exabytes of data around the planet according to IBM Research's Michael Karasick: that figure was then projected to grow to approximately 9,000 to 10,000 exabytes of data by 2015 – attributable predominantly to the generation of data by mobile devices and social media networks, and to the growth of enterprise data (King, 2012).

Xu, Frankwick & Ramirez (2016, p.1562) explicate how 'Big Data' has been used as "a term that primarily describes datasets that are so large (terabytes to exabytes), unstructured, and complex (from genome-analysis, political science, sensor, social media, or smart phone apps, to Internet-based gadgets data) that require advanced and unique technologies to store, manage, analyze, and visualize." In practical terms, Big Data fundamentally constitute "the overwhelming volume and variety of digital information produced by and about human activity" (Lewis, 2015, p.322) that can be mined for trends, patterns and associations pertaining to the behavior of people online. Big Data

can hence be defined as "high-*volume*, high-*velocity* and/or high-*variety* information assets that demand cost-effective, innovative forms of information processing for enhancing insight, decision-making, and process automation" (Gartner, Big Data, 2012-2018). The most prominent features that distinguish Big Data from traditional large-scale datasets include:

- volume – the scale or size of data;
- velocity – the speed and flow of data as well as their processing; this has to do with the "timeliness of Big Data, specifically, data collection and analysis must be rapidly and timely conducted, so as to maximize the use of the commercial value of Big Data" (Rodríguez-Mazahua *et al.*, 2016, p.3074);
- veracity – the degree of uncertainty or unreliability of data; this has to do with "the need to check the accuracy of the data by eliminating noise through methodologies such as data pedigree and sanitization. This is to ensure data quality so that decisions that are made from the collected data are accurate and effective" (Rodríguez-Mazahua *et al.*, 2016, p.3075);
- value – the worth of data based on how they can be potentially exploited for commercial gain; data can constitute "a 'commodity' that can be sold to third parties for revenue" and "understanding the cost or value of the data can aid in budget decision-making and estimating the storage cost of the data" (Rodríguez-Mazahua *et al.*, 2016, p.3075);
- variety – the different types, forms and sources of structured, unstructured and semi-structured data.

And "variety is becoming the single biggest driver of big-data investments, as seen in the results of a recent survey by New Vantage Partners. This trend will continue to grow as firms seek to integrate more sources and focus on the 'long tail' of big data," according to Tableau Software (2017).

Information is filtered, selected and evaluated by means of statistical methods associated with data mining, language processing, and various Big Data tools. The latter are categorized according to the kind of analysis being carried out, such as: "(1) batch analysis, where data are firstly stored and then analyzed; (2) stream analysis, which is the extraction of information and knowledge discovery from continuous, rapidly generated streams of data, and (3) interactive analysis, which process the data in an interactive environment, allowing users to undertake their own analysis of information" (Rodríguez-Mazahua *et al.*, 2016, p.3078). Ultimately, Big Data are not so much about data quantity – as articulated in terms of Gigabytes, Terabytes, or Petabytes – but more about the insights gained from analyzing the data in question by employing particular techniques and technologies. Edwards & Fenwick (2016, p.216) confirm how

> digital analytics have become a key means of performing knowledge through tagging, classification, standardization, calculation, circulation and visualization, and these require codes and algorithms. […]. In effect, digital analytics and the standardization they require

> to function are integral to much of our knowledge, communication and decision-making, and are part of the enactment of new ways of working and governing work.

Big Data thus help corporate and public organizations to extensively comprehend online behavior more than most people actually realize: not just what they are doing, listening to or watching or but also where, when and with what technological device. *Tweeter* likes, *Facebook* pokes, *Google* searches or *YahooNews* preferences, for example, enable service providers and advertisers to collect a lot of raw information from appliances connected to the Internet and from smart phones about people's habits and preferences. Major advancements with regards to data creation, access and storage at constantly smaller costs have made it easier to navigate and analyze the shadow layer, in the form of Big Data, of public lives online. Social media analytics, for instance, have emerged to essentially evaluate "informatics tools and frameworks to collect, monitor, analyze, summarize, and visualize social media data to facilitate conversations and interactions to extract useful patterns and intelligence" (Fan & Gordon, 2014, p.74).

As a consequence of processing colossal quantities of eclectic data generated by always-on invisible sensors and tracking tools implanted in the technological appliances and mobile devices that people interact with daily, a surfeit of algorithms now generate all sorts of predictions and models of people's preferences. Those unseen algorithms subsequently influence what shows people watch, what news they read, or even who they might vote for (considering how topics that end up trending on social media are mostly determined by algorithms). About such a state-of-affairs, *The Guardian* (2018) has commented that "the conceit of data mining firms – and the politicians who use them – is that they could win elections by molding electorates based on new forms of identity and new value systems. This process is accelerated by the echo chamber of social media, which allows citizens to close themselves off from wider debate and become infatuated with their own truths." Through increasingly complex channels of communication, artificial intelligence, data-crunching algorithms and prediction engines are managing how people view their own society and the world beyond.

> From the consumer's perspective, the prevalence of social media transforms how people obtain information, connect with others, endorse their favorite brands, and purchase products. Social data analysis grows out of these activities and combines disciplines such as social network analysis, multimedia management, social media analytics, trend discovery, and opinion mining (Xu, Frankwick & Ramirez, 2016, p.1563).

The gathering, processing and scrutiny of Big Data impact tremendously on how the contemporary communication and media industries operate: by influencing decisions about investment and funding, and by re-shaping the ways in which communication and media producers not only create content but also engage with and manage business-critical audiences. "From both the production and the consumption standpoint, big data-fuelled algorithms are

increasingly dictating how media consumers navigate their media environment, while also increasingly dictating content production decisions" (Napoli, 2016, p.3). Resorting to Big Data insights and inferences ultimately permits a more precise customization and personalization of content, product and services that more effectively fulfill the specific needs of each type of consumer and audience.

Big Data and Television

An ever-expanding audience of viewers who want to watch whatever they want wherever and whenever has become a fast growing trend in the light of the exponential rate of smart phone penetration on all continents. To fulfil the needs and expectations of billions of viewers/consumers globally, the online streaming of original TV shows and the delivery of Video-On-Demand services have become some of the most lucrative markets on the Internet. This accentuates how the audience remains a dominant fixation in the hyper-competitive communication and media industries. All business is fundamentally risky, but business in the communication and media industries can be "particularly risky because they are centered on the production of texts intended to be bought and sold to audiences that subsequently use these texts in highly volatile and unpredictable ways" (Redvall, 2016, p.139). Because of high sunk expenses that frequently arise in the elaboration and production of communication and media content (such as for a new TV commercial or serial) and because of the absence of absolute certitude about audience interest in or demand for any particular content, in the communication and media industries "the need to know and to anticipate audience tastes becomes crucial for predicting successful returns on investment" (Havens, 2014).

Whether people are doing a search, playing a game or viewing a show, a record is made of how many people begin or stop an activity online – like each time people are pausing, rewinding and fast-forwarding when they watch audio-visual material, for example. Hence, thousands of viewers pausing while they watch a particular TV show online would generate ample data for logarithms to crunch and for inferences to be made about viewers' levels of interest at particular points of that show. The latter inferences can then subsequently be taken into account by the TV show's producer and by the TV network when preparing new episodes or making future programming choices in order to more effectively fulfill viewers' interests and expectations. With increasingly more people watching content streamed online than on physical Blu-ray Discs and DVDs, "big bets are now being informed by Big Data, and no one knows more about audiences than Netflix. A third of the downloads on the Internet during peak periods on any given day are devoted to movies streamed by Netflix" (Carr, 2013). Hence, Netflix's proprietary algorithms apparently scrutinized trillions of Netflix data points which permitted "a better understanding and targeting of viewers' tastes and of how effectively the company filtered its glut of subscriber data to create and distribute" (Havens, 2014) exclusively online its popular award-winning

series *House of Cards* (2013-), as well as validated Netflix's initial investment of US$100 million for the show to go into production. Carr (2013) further clarifies how TV shows and movies on Netflix are:

> annotated with hundreds of tags – metadata descriptors – inserted by viewers commissioned to describe the talent, the action, the tone and the genre, among many other things. In the past, those tags were used to recommend other shows from the long tail of content on the service, essentially building profiles based on the preferences of individual subscribers. But now Netflix is commissioning original content because it knows what people want before they do.

And, like with the making of *House of Cards*, Netflix apparently implemented a similar approach when creating another one of its many successful TV shows: *Orange Is The New Black* (2013-).

Big Data and Journalism

As "the traditional dual product marketplace of selling content to audiences and audience attention to advertisers continues to break down, the notion of an alternative dual-product marketplace in which user data replaces audience attention represents another direction" (Napoli, 2016, p.4) that the news industry needs to follow. News writing, as the most basic form of journalism work, has already started evolving in a major way with the involvement of non-human content producers in generating news stories. News content is now being created according to what has been labeled 'automated journalism'. The term refers to "algorithmic processes that convert data into narrative news texts with limited to no human intervention beyond the initial programming" (Carlson, 2015). Some consider data-oriented practices like 'automated journalism' to be highly disruptive with regards to 'traditional' compositional forms of news, journalistic labor and authority – as a result of which have emerged "fundamental tensions not only about the work practices of human journalists but also about what a future of automated journalism may portend for larger understandings of what journalism is and how it ought to operate" (Lewis, 2015, p.325). But for others however, like *The New York Times* creative director Alexis Lloyd, "the future of computational journalism and automation will – and should – be a collaborative one, where you have machines and people working together in a conversational way" (quoted in Lecompte, 2015).

Journalists working for such news providers as *ProPublica*, *Forbes*, *The New York Times*, *Oregon Public Broadcasting* and *YahooNews* are now recurrently using algorithms in the process of telling stories about business, sports, education, public safety, and so on (Lecompte, 2015). Automation tools

> support news organizations in their push to develop new storytelling formats that highlight the relationships between news events and help provide readers with richer context. Most of these efforts require large amounts of detailed metadata that can help link together stories that have in common people, places, or ideas. Adding metadata is a

> frustrating task for most reporters, who are typically more concerned with crafting their story than dissecting it. Automation is a way to expand the use of metadata – without putting an extra burden on reporters and editors (Lecompte, 2015).

Automation tools effectively support news gathering by tracking social media datasets and enabling journalists to become aware of specific issues, to pay more attention to particular conversations online, and to subsequently react and produce news content faster.

Big Data, Advertising and Public Relations

It is now almost impossible for contemporary advertising and public relations practitioners to operate successfully without engaging with, making sense of and leveraging Big Data. Every project undertaken essentially involves collecting, analyzing and interpreting data culled from various primary and secondary sources. As the practice of advertising and public relations strives to not only provide but also demonstrate 'value-addedness', all proposed strategies and content have to be based on data and their accurate (and ethical) interpretation. Social media channels for instance cannot be effectively managed simply by means of posting creative content alone: social listening and monitoring in real-time are also required to identify consumer concerns.

The practice of advertising and public relations has been shifting from generalist to specialist realms with a place for different skills set, but each in their individual category must outperform to stay connected and relevant. Practitioners hence increasingly have to address audience segments with specific interest points in order to be captivating, to connect immediately, and to hold audience attention. As such, being able to read the audience to know what each particular segment cares most about becomes a vital skill. The vast amounts of data generated by social media platforms give the opportunity to advertising and public relations agencies to listen in to the many thousands of things being voiced online about their brands and clients. Big Data analytics and insights help to find out a number of things about online consumers: who they are, how they feel, what they want, where they get their information from, and how they choose to buy anything.

In advertising and public relations, Big Data get generated as a result of reputation measurement, brand image measurement, the monitoring of traditional and social media, and the monitoring of issues in real-time. Global communications firm Edelman, for example, uses a combination of monitoring and analysis technologies that include Radian6, Brandtology and iSentia as well as its own proprietary technologies like TweetLevel and BlogLevel to operate in real-time. Global public relations firm Weber Shandwick for its part launched in Asia-Pacific its own Mediaco monitoring tool which relies heavily on performance analytics with regards to how different audiences are consuming content across multiple channels. According to the head of digital at Weber Shandwick Asia-Pacific Jonathan

Wade, "the real benefits of real-time data are in maximizing engagement and results with media and therefore ensuring budgets and resources are optimized for the best return on investment. This also means our audiences get the content they want, when they want it" (quoted in Benjamin, 2014).

Real-time monitoring tools hence enable stories to be tracked not only as they hit mainstream media but also as they start to develop even earlier through social media channels. To meet the needs of the client in today's digital world, advertising and public relations agencies are hence making serious investments in real-time planning, monitoring and their related technologies. By enabling a deeper understanding of customers, consumers and users, Big Data analytics and insights assist advertising and public relations agencies in choosing the appropriate social media platforms to spread information as well as to fine-tune social media messages.

The Need to Sync Communication and Media Education with Professional Practice

In different informal discussions and conversations between the author and senior practitioners in the contemporary communication and media industries, a commonly professed opinion is that many fresh communication and media graduates display in entry-level jobs limited preparedness with regards to engaging with Big Data as well as to utilizing various planning and monitoring technologies. This is perceived to be the result of a gap in the overall skill sets being imparted to students who, for their part, would often claim that the study programs they were enrolled in did not equip them with such skills. Neill & Schauster (2015, p.12) quote a U.S-based digital consultant as saying that students are ill-prepared in the area of tools and technologies used in contemporary public relations and advertising campaign strategies that now include programmatic buying, content amplification, social listening, monitoring and insights: "when they land at an agency, […] there's at least a one-year learning curve to just look inside mostly vast software, service-based tools and platforms that are now driving the business today." In order for Big Data to be used in the most relevant and effective way, the right interpretation logic needs to be deployed through a combination of algorithmic and human analysis. Whether denoted as 'Big Data' or 'algorithmic culture', "the integration of digital recording, distribution, and data analysis technologies" (Havens, 2014) in the operations of the communication and media industries is an actuality that contemporary students simply have to be familiarized with.

There are so many instances of algorithms, automation and artificial intelligence being applied on a daily basis to productively support work and to facilitate content adaptation and customization for different types of audiences and consumers in the media industries. As a result, "the ability to effectively analyze large quantities of data is spilling over into a wide range of media industry career paths that previously did not require this particular skill set" (Napoli, 2016, p.3). But learning about Big Data usage, analytics, insights and related applications is however still a limited aspect of many

contemporary communication and media programs curricula which may appear to be out-of-sync with how Big Data analytics and insights are at the center stage of contemporary processes of content production in the communication and media industries. Many communication and media programs hardly offer opportunities for students to develop the kind of analytical skills and technical competencies relevant to engage with Big Data productively and to acquire a better understanding of highly complex channels of communication and of the behaviors of globally dispersed highly interactive online audiences.

The relative 'new-ness' of Big Data inevitably means a short history about how the right skills and relevant competencies should be taught. Duncan, Caywood & Newsom (1993) have however convincingly argued that integrated and flexible curricula can help higher education programs keep up with trends in the advertising and public relations industry, for instance, while enabling the adequate professional and personal development of students. And there is a legitimate case to be made about implementing a shift in the teaching of communication and media programs: from a lecture-based format to a modular learning-oriented approach that is predominantly inquiry-based and that considers students as scientists who "develop hypotheses, design and conduct experiments, collect and interpret data, and write about their results" (Handelsman *et al.*, 2004, p.521).

Educators and educational institutions need to reflect on and review the kind of attributes and competencies they are fostering in future professionals who will operate at various levels of the communication and media industries. Curricula for communication and media programs require some re-orientation to enable the nurturing of skills that allow students during their studies to access, analyze, interact with and apply Big Data to generate content in similar ways as in the contemporary communication and media industries. In being trained to deal with a fast-evolving computer-mediated world, communication and media students need to be taught to manage and make sense of large volumes of data. Such activity requires some knowledge of statistics and the ability to extract insights, in combination with a solid knowledge of the 'traditional' fundamentals of the communication and media industries (such as how public opinion building works, how to use techniques of persuasion, media effects, and so on).

Communication and media students need to develop adequate numerical competency in order to understand, analyze, interpret, and ultimately leverage the kind of information they have access to, in addition to the core competency of the written word traditionally expected of those engaging in processes of communication and media content production. This can be achieved by including math-intensive courses that involve statistical calculation and analysis as core components in the curricula of communication and media programs. And if those programs enable basic skills to be developed in prescriptive analytics, diagnostic analytics, predictive analytics and outcome analytics, communication and media

students would wholly comprehend not just how and why "large-scale datasets and their collection, analysis, and interpretation are becoming increasingly salient for making sense of and deriving value from digital information" (Lewis, 2015, p.321), but also in what manner such information can be utilized in contemporary practices for producing communication and media content. Communication and media program curricula that continue not to cultivate skills in mathematics, statistics and data analysis are not likely to produce the kind of graduate attributes that are in sync with Big Data-oriented work carried out in the contemporary communication and media industries.

The proliferation of Big Data has influenced the emergence of many new roles in the communication and media industries that depend on math-centric skills for the purpose of data management and analysis processes relating to different types of audiences, such as social media analysis, social media listening and programmatic buying. "The simultaneous evolution of big data applications and new audience formations via the Internet signifies the extent to which we may find ourselves increasingly studying data about audiences, instead of the audiences themselves" (Athique, 2018, p.71). As new media tactics and production practices emerge in response to new audiences, technologies, tools, platforms and channels, and as social media analytics and various forms of Big Data become even more influential on creative decisions, skills in mathematics and statistics are now additionally needed by communication and media students. They will be expected to know how to gather, make sense of, assess, and apply different types of numerical data as part of doing work in the communication and media industries.

Writing and presentation skills are still considered essential for students to develop and for educators to nurture with regards to the practice of advertising and public relations. But advertising and public relations professionals are increasingly expected to additionally have adequate skills in mathematics and statistics – especially because of the prominence of data and analytics across a multiplicity of media platforms and channels – which would enable them to evaluate trust scores for active social media subscribers (by using social network data analytics for example). Communication and media programs should familiarize students with such content management and social listening tools like Sysomos, Hootsuite and Radian6, with content amplification tools like OutBrain, and with media planning and buying tools like comScore, DART, Trade Desk, Rubicon, Pubmatic, ThinkVine and AgilOne. This should allow future advertising and public relations practitioners to comprehend how software is used to automate the purchase, placement, and optimization of media inventory via a bidding system: student projects should hence involve engagement with programmatic media buying, marketing and advertising tools like DoubleClick Campaign Manager, Admedo and Paid Search. They should also learn the principles of Boolean search, by being made to use Sysomos software for instance, in the process of learning how to look for information that is relevant to their projects. And they also need to be made to practice text mining from Twitter data for the

purpose of making insights about brand associations. Future reporters and journalists should be taught how automation technologies are being incorporated by editors into the work flow of the newsroom so that they can concentrate on the fundamental aspects of being reporters and have extra time to work out the best way to tell a story. This can be done by incorporating particular automation technologies into the practical assignments of journalism courses, such as BBC's Juicer to streamline media work flows, Reuter's News Tracer to track down breaking news, The Washington Post's Knowledge Map to dig out media insights and Narrative Science's Quill platform to turn raw data into intelligent stories (Underwood, 2018). And with regards to television production, future television scriptwriters should be made aware of how algorithms now analyze trillions of data points to enable a better perception and more precise targeting of the taste of viewers, and they should be given projects that would require them to create scripts and audio-visual content based on the analysis of data about specific types of audiences.

Conclusion

A key transformation currently happening and impacting on workers in the communication and media industries is the transition from an era of data paucity to an era of data overabundance about the audience whereby

> different individuals and organizations are using data to try and gain acquiescence and advantage over other players. Many believe that the massive amount of data on viewership that Netflix collects, for instance, including more than fifty data points about the consumption of every film and television show, gives Netflix substantial capacity to predict what viewers want, far more than traditional Nielsen ratings ever gave broadcasters (Carr, 2013).

The speedy propagation of digital information technologies and the extensive reliance on Big Data to generate content have overwhelmed workers in the communication and media industries with immense quantities of information about audiences. But Big Data also allow communication and media practitioners to be able to display almost immediately the impact and worth of their work to senior management: following the release and distribution of content, various kinds of metrics become rapidly available to enable the evaluation in real-time of how it is being viewed/consumed.

While the impact of Big Data on professional practice is clearly recognized, as illustrated by how the ways of working are being transformed in the contemporary communication and media industries, Henke *et al.* (2016) pertinently comment however that adapting to "an era of data-driven decision-making is not always a simple proposition. Some companies have invested heavily in technology but have not yet changed their organizations so they can make the most of these investments. Many are struggling to develop the talent, business processes, and organizational muscle to capture real value from analytics." It should also be noted that as a research discipline, Big Data

and Big Data analysis "are still evolving and not yet established, thus, a comprehensible understanding of the phenomenon, its definition and classification is yet to be fully established" (Sivarajah *et al.*, 2017, p.264). While Big Data might still be considered an emerging phenomenon, its impact on professional practice in the communication and media industries has made it nevertheless very relevant to current communication and media-related academic research.

Because of how Big Data are already seriously impacting on ways of doing and of knowing, as well as on the negotiation of value within the communication and media industries, analytical and strategic thinking skill sets have become a premium that really need more serious nurturing. Big Data hence need to be more present in the curricula of contemporary communication and media programs so as to better prepare students in effectively using Big Data analytics and insights when developing and producing content.

This paper has argued for the need to review communication and media education curricula in the light of the: perceived contemporary state of communication and media education in relation to Big Data usage; questionable preparedness of fresh university graduates to deal with Big Data in entry-level jobs; predilection of the contemporary communication and media industries for recruiting workers who are able to analyze, interpret and use big data in an intelligent and effective way. Teaching, the role of communication and media educators and the discipline's overall purpose should hence be re-oriented towards better equipping communication and media students with updated competencies and skill sets that would make them a lot more industry-ready in professional worlds already extensively driven by Big Data usage, analytics and insights.

To follow up on the ideas and points brought up here, the intended subsequent phase will be to work towards substantiating and validating the argument proposed in this theoretical paper by means of qualitative data collection and analysis – which will involve in-depth personal interviews in particular. As explicated by Davis (2012), such interviews are adequate and relevant when motivation, attitudes and behaviors need to scrutinized, while Hatzios & Lariscy (2008) indicate that they can also produce a much deeper level of detail. The scope of data to be collected and analyzed will ultimately depend on budgetary considerations as well as on the availability of the communication and media professionals concerned.

Acknowledgments

Many thanks to the reviewers for their comments and suggestions on an earlier draft of this paper.

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Manuscript submitted: ***January 15, 2018***
Manuscript revised: ***October 19, 2018***
Accepted for publication: ***September 28, 2018***
