



A causal model of learning outcomes and job ability of Thai university students educated under the communication arts curriculum in digital era

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Abstract

A causal model of learning outcomes and job ability of Thai university students educated under the Communication Arts curriculum in Digital era was developed. The quantitative data were collected from students studying in year 1 and year 3 of the bachelor's degree in Communication Arts from Thai universities in the northern, central, northeastern, and southern prefectures. Samples were selected using stratified random sampling technique, and they represented a total of 696 samples from 12 universities. The research instrument was in the form of questionnaire and SEM was used for the analysis to validate the causal model. The exogenous latent variables were: (1) self-efficacy; and (2) teaching quality, and campus experience. The endogenous latent variables were: (1) learning outcomes; (2) job ability; (3) learning motivation; and (4) learning strategies. Results indicated that the hypothetical causal model was consistent with the empirical data with $\chi^2 = 17.501$, $df = 10$, $p = 0.064$, RMSEA = 0.029, GFI = 0.997, AGFI = 0.973, CFI = 1.00, RMR = 0.004, and SRMR 0.009. Job ability was directly affected by the highest learning outcomes with a positive influence coefficient of 0.49. Self-efficacy had the highest total effect on the job ability, learning outcomes, and learning motivation with a positive influence coefficient of 0.68, 0.57, and 0.71 respectively while learning motivation had the highest total effect on the learning strategy with a positive influence coefficient of 0.73. These causal factors can commonly explain 77.8 percent of variance in job ability and 74.7 percent of variance in learning outcomes.

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Introduction

The science of supervision and communication is very important to social and national development particularly in the current digital era because social media has high influence on people's lifestyle and behavior (NESDC, 2012). This conforms to important strategies of the 20-year national education plan which emphasizes global changes of the 21st Century. It is essential that learning outcomes of students studying in the communication arts must be compatible with this social change. This study considers job ability as readiness of persons who wish to work and recognizes how their ability and skills can be fully applied for works (Wahat, 2015). This is an integration of knowledge, skills, attitudes, and personal characteristics to effectively perform their professional work. Good learning outcomes must also reflect or forecast job ability (Arum et al., 2012; Liu, 2015). Learning outcomes are related to job ability because the organization's personnel recruitment not only consider the relevant educational qualification, but also the experience or learning outcomes, as well as the gained experiences (Farouq & Adilovic, 2014).

In the study on causal factor influencing learning outcomes and job ability, social and psychological concepts, the social learning theory of Bandura (1986) and the Input-Environment-Output (I-E-O Model) of Astin (1971) were adopted. The input factor that has direct and indirect influence on learning outcome is self-efficacy (Joo, et al 2013; Krumrei-Mancuso, et al., 2013; Liu et al., 2015). The learners with high recognition of their efficiency and self-efficacy also have good learning achievement (Asadi et al., 2010; Su & Duo, 2012). Learning motivation and learning strategy have a positive influence on learning outcome, and such can be predicted with statistical significance. Learning strategy also acts as a mediator that transfers influence of learning motivation to learning outcomes (Hsieh, 2014; Su & Duo, 2012; Liu et al., 2015). Meanwhile, the social environmental factor that affects the learning outcome is the campus experience, which refers to student's experiences outside the classroom within their universities' academic and non-academic environments. The campus experience has overall influence on various abilities of students and plays an important part in supporting students to learn and develop character traits and skills (Liu & Chang, 2014). Furthermore, the teaching quality that reflects the process of learning activity also has a direct influence on students' knowledge such as teaching media and teacher-student interaction and understanding in relation with learning

outcomes (Musah et al., 2015). As such, it can be said that learning outcomes affect the job ability in the way that both official and unofficial learning have an influence on job ability though learning at the workplace.

As aforementioned, the study on causal factors influencing learning outcome and job ability of graduates from the Communication Art curriculum is necessary. Findings from this study will lead to recommendations on guidelines for the development of causal factors. It will also enhance the quality of the learning outcome of students in the Communication Art curriculum for better efficiency and social responses tangibly conforming to Thailand's context in the 21st century. The objective of this research was to develop a causal model of learning outcomes and job ability of students educated under the Communication Arts curriculum in Digital era.

Literature Review

Theory

Theories commonly employed by researchers for explaining causes of a person's behavioral expressions or learning outcomes include Social Learning Theory of Bandura (1986) and the theory of Input-Environment-Output (I-E-O model) of Astin (1971). As human behavior is a result of a person's continuous behavioral interaction between person and the environment, this theory emphasizes a person's process of learning through modeling (Bandura, 1986).

Astin (1971) studied and presented the Astin's I-E-O Model for studying student outcomes of students at higher education level by referring to a relationship between factors affecting learning management at the higher education level. These three factors are comprised of the "Input", namely, internal and external character traits of students, the "Environment", which refers to student's learning experience gained from the academic institutions of higher education, which are related to the student's "Outcome". This last factor refers to student's changes or development resulting from the institution's "Environment" and "Input" factors. The theory of I-E-O Model has been applied as a guideline for explaining the causal relationship of the phenomena that affect student's learning outcomes (Lin et al., 2017; Liu & Chang, 2014).

Learning Outcome

Office of the Education Council (2017) has defined "learning outcomes" as criteria for identifying

characteristics and outcomes of learning, either resulting from the learning process or experiences directly gained from operational training or working. Learning outcomes indicate that students have met the objectives set by teachers, showing their progress from learning experiences, or effecting their ability after teaching (Hsieh, 2014), which can be evaluated in accordance with Bloom's Taxonomy, comprising Cognitive Domain, Affective Domain, and Psychomotor Domain (Kyriakides et al., 2013). However, learning outcomes have a variety of definitions, which is seen in the work of Lin et al. (2017) which specified that the learning outcomes are comprised of satisfaction, perceived progress, and study result. Abdous and Yoshimura (2010), and Victoria, Carmen, and Rodríguez-Ariza (2011) studied the learning outcome only by the Grade Point Average (GPA). This study concluded that learning outcomes are categorized into 3 aspects: cognitive ability, professional ethic, and professional skill.

Job Ability

Academics have similarly defined job ability as an accordance between job qualification and a person's efficacy and experience (Sharabi, 2010). This research refers to an integration of knowledge, skill, attitude, and personal characteristics to efficiently do the job in one's profession. As such, it is comparable to working competence or skill, so it covers the skill set targeted by the Communication Arts graduates in the Digital era.

Causal Factors Effecting Learning Outcomes and Job Ability

Learning strategy is a guideline for self-conduct with a clear plan or goals and process. Such self-conduct continuously proceeds with the set plan or process so that it has become a unique technique for an individual to select an effective strategy to the specified learning or working goals (Protheroe & Clarke, 2008). This study specified its components into two parts comprising Direct strategies and Indirect strategies (Oxford, 1990). Meanwhile, *learning motivation* is an important factor that influences an increase of learning outcome because it helps stimulate a person to act for achieving the desired goal, and is classified into intrinsic motivation and extrinsic motivation (Bahri & Corebima, 2015). Motivation makes a person desire to learn about things and use a learning strategy to develop knowledge and

attain more of the expected self-efficacy. Regarding *Self-efficacy*, this is a characteristic of an individual that expresses self-confidence in making decision to conduct any behavior to achieve the goal, and to do self-assessment to prove the level of success. Results of most research found that the perceived self-efficacy also has an influence on the learning efficiency (Grigg et al., 2018; Schöber et al., 2018).

The *teaching quality*, which is a variable that relates to and efficiency of learning and working, involves the teacher's behavior in organizing learning activities that influences students' awareness and learning. Quality of teaching will help increasing students' learning efficiency (Leon et al., 2017; Wong et al., 2017). Finally, *Campus Experience* refers to participation in activities organized both within and outside the university (Temple et al., 2014). Participating in activities organized either by the university or by students themselves can all bring experiences to students. In this regard, Astin (1993 cited in Foubert & Urbanski, 2006) indicated 3 types of most efficient participation, comprising academic participation, faculty participation, and peer participation.

In this regard, results from the study of related theories and documentary synthesis for selection of variables have led to the development of a causal model of learning outcomes and job ability of students during Communication Arts in Digital era, in this research, as shown in [Figure 1](#).

Methodology

Participants and Data Collection

Quantitative data were collected from Thai university students currently studying in year 1 and year 3 of the bachelor's degree in Communication Arts, totally 17,141 students. Then, the sample size was specified by using Structural Equation Modeling (SEM), with a group of 10–20 observations for 1 parameter (Hair et al., 2010). In this study, there were a total of 42 parameters that needed estimation. Sample were selected by using the four regions, taken as strata and the stratified random sampling method, applied with the size of the subject group from each stratum being proportionately calculated for a balanced distribution. Then, a simple random sampling method was used to represent a total of 12 universities. There were a total of 696 samples including the northern (29.8%), central (22.0%), northeastern (23.3%), and southern (24.9%) regions.

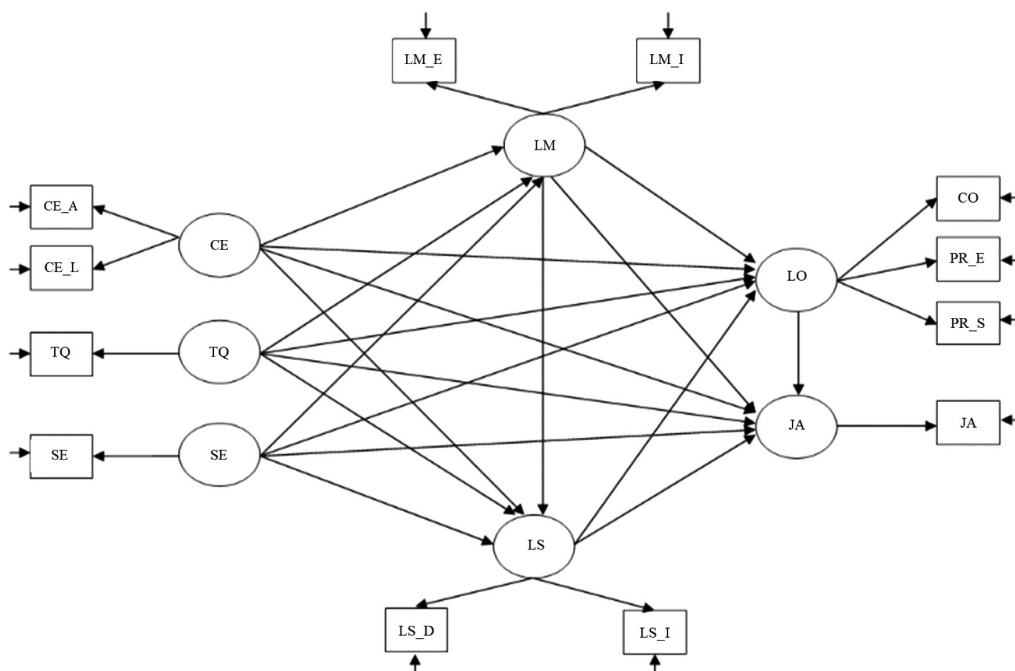


Figure 1 Analytical Conceptual Framework

Data Analysis and Research Instrument

The causal relationship was examined between learning outcomes and job ability of Communication Arts students in Digital era by analyzing the Structural Equation Model (SEM) and measuring the goodness of fit to consider the congruence of the model, developed by the researcher with the empirical data.

The questionnaires comprised of seven variables including job ability, learning outcome, learning motivation, self-efficacy, learning strategy, campus experience, and teacher quality. There was a total of 86 questions, and the participants were asked to rate each item on a 5-point Likert scale (1 = extremely disagree; 5 = extremely agree). All instruments used in this research were developed from studies on documents and relevant theories. Content validity and language clearness were checked using five experts in psychology, measurement, and curriculum development. An Index of Item-Objective Congruence (IOC) was used to measure the validity of the content of all questionnaires. IOC values were between 0.60 and 1.00. The Reliability Cronbach's Coefficient of Alpha was used to calculate the reliability value of the questionnaire, and it was found that the seven variables had values of 0.927, 0.958, 0.928, 0.930, 0.939, 0.932 and 0.936, respectively. The discrimination indexes of all variables, which were higher than 0.2, were between

0.363 and 0.829. The construct validity by using the confirmation factor analysis ensured that the measuring model of all variables conformed to the empirical data with the presumption that the value of chi-squared: χ^2 , df or χ^2/df was less than 3.00, GFI, AGFI, RMR, and RMSEA also met the criteria of Hu and Bentler (1999 cited in Brown, 2015).

Results

Descriptive Statistics and Assumptions Testing

The results of descriptive statistics found that most students were satisfied with their teacher's teaching quality at highest level ($M = 3.76$, $SD = 0.64$), and learning outcome in professional ethic ($M = 3.74$, $SD = 0.66$) respectively, but satisfied with cognitive learning outcome at lowest level ($M = 3.45$, $SD = 0.55$). Pearson's coefficient correlation was used to investigate the relationship between observable variables. The coefficient correlation ranged between 0.29 and 0.76. A positive correlation at a significant level of .01 was found among all observable variables. In addition, multicollinearity was not found, the relationship between observable variables was less than 0.80. Bartlett's test: $\chi^2 = 5744.785$, $df = 66$, $p = .00$, which indicates that the correlation

Table 1 Mean, standard deviation, and Pearson's coefficient correlation of observe variables

Variables	JA	COG	PR_E	PR_S	LS_D	LS_I	LM_E	LM_I	SE	TQ	CE_L	CE_A
JA	1.00											
COG	0.62**	1.00										
PR_E	0.54**	0.58**	1.00									
PR_S	0.76**	0.64**	0.57**	1.00								
LS_D	0.68**	0.54**	0.49**	0.64**	1.00							
LS_I	0.58**	0.51**	0.49**	0.56**	0.70**	1.00						
LM_E	0.53**	0.47**	0.47**	0.48**	0.59**	0.59**	1.00					
LM_I	0.71**	0.51**	0.57**	0.61**	0.66**	0.59**	0.60**	1.00				
SE	0.69**	0.57**	0.57**	0.64**	0.74**	0.66**	0.66**	0.69**	1.00			
TQ	0.56**	0.51**	0.49**	0.51**	0.59**	0.61**	0.55**	0.57**	0.67**	1.00		
CE_L	0.47**	0.42**	0.40**	0.49**	0.51**	0.54**	0.47**	0.48**	0.54**	0.66**	1.00	
CE_A	0.45**	0.35**	0.29**	0.43**	0.48**	0.48**	0.41**	0.40**	0.48**	0.61**	0.67**	1.00
Mean	3.55	3.45	3.74	3.53	3.58	3.73	3.64	3.72	3.66	3.76	3.67	3.51
SD	0.58	0.55	0.66	0.59	0.65	0.67	0.71	0.67	0.63	0.64	0.68	0.73

Note: $n = 696$, ** $p < .01$, KMO = 0.941, Bartlett's test: $\chi^2 = 5744.785$, $df = 66$, $p = .000$.

matrix between the observable variables significantly differed from the identity matrix. The KMO index equaled 0.941, which indicates that the observable variables had a strong relationship.

Goodness of Fit of the Causal Relationship Model

The causal relationship model of learning outcomes and job ability developed in accordance with relevant theories and research conforms to the empirical data with $\chi^2 = 17.501$, $df = 10$, $p = .064$, RMSEA = 0.029, GFI = 0.997, AGFI = 0.973, CFI = 1.00, RMR = 0.004, and SRMR 0.009 when comparing with the criteria of Hu and Bentler (1999 cited in Brown, 2015), which indicated that the model fit can be considered from: (1) SRMR was close or lower than 0.08; (2) RMSEA was close or lower than 0.06; and (3) CFI was close or higher than 0.95.

Direct, Indirect, and Total Effects in the Causal Model

When considering the influence of causal factors affecting job ability, it was found that learning outcomes and self-efficacy have direct influence on job ability ($\beta = 0.49$ and 0.30), in which self-efficacy has the highest overall influence on job ability. In addition, self-efficacy and teaching quality have indirect influence on job ability ($\beta = 0.38$, and 0.14). In this regard, the causal factors in the model could explain variance of variables of job ability, with square multiple correlation (R^2) of 0.78.

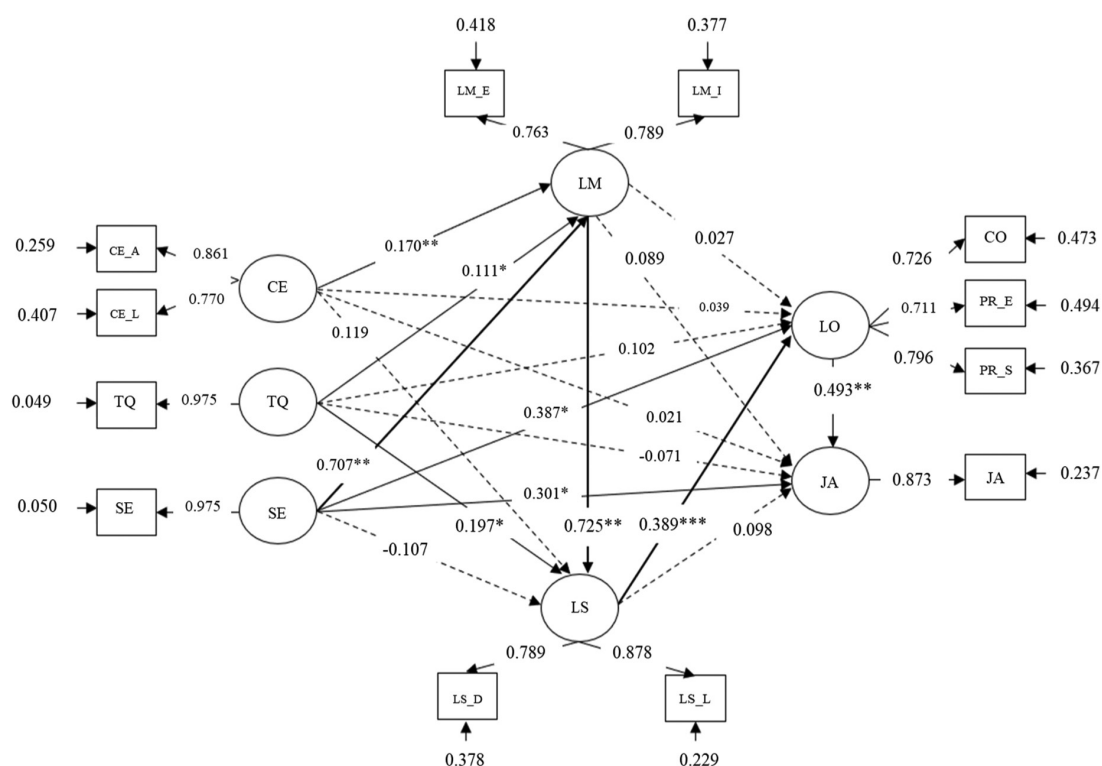
For the influence of causal factors on learning outcomes, it was found that the learning strategy and self-efficacy directly influence learning outcomes ($\beta = 0.39$) while learning motivation has the highest indirect influence on learning outcomes ($\beta = 0.28$), followed by teaching quality and campus experience ($\beta = 0.11$ and 0.10 , respectively). When considering the overall influence on learning outcomes, it was found that self-efficacy has the highest overall influence, followed by learning strategy, and teaching quality, respectively. In this regard, the causal factors in the model together explain variance of variables of learning outcomes with square multiple correlation (R^2) of 0.75. Results show that self-efficacy has an important role both in exerting direct and indirect influence on job ability.

Self-efficacy has a direct influence on learning motivation ($\beta = 0.71$), meanwhile learning strategy was directly affected by learning motivation and teaching quality ($\beta = 0.73$ and 0.20 respectively). As such, if students gain experience from the university and receive good quality teaching from the teachers, together with positive self-efficacy, they will have learning motivation and develop a good learning strategy, which will result in student's good learning outcomes. In this regard, students with good learning outcomes will also have good job ability. The details of the analysis are shown in Table 2 and Figure 2.

Table 2 Standard direct effect (DE), indirect effect (IE), and total effects (TE) among variables

Variables	JA			LO			LS			LM		
	DE	IE	TE	DE	IE	TE	DE	IE	TE	DE	IE	TE
SE	0.30*	0.38**	0.68**	0.39*	0.18	0.57**	-0.11	0.51**	0.41**	0.71**	-	0.71**
TQ	-0.07	0.14**	0.07	0.10	0.11**	0.21**	0.20**	0.08	0.28**	0.11*	-	0.11*
CE	0.02	0.11*	0.13*	0.04	0.10**	0.14	0.12	0.12*	0.24**	0.17**	-	0.17**
LM	0.09	0.22	0.31*	0.03	0.28*	0.31	0.73**	-	0.73**	-	-	-
LS	0.10	0.19	0.29*	0.39**	-	0.39**	-	-	-	-	-	-
LO	0.49**	-	0.49**	-	-	-	-	-	-	-	-	-
<i>R</i> ²	0.78			0.75			0.78			0.83		

Note: * $p < .05$, ** $p < .01$.

**Figure 2** The causal relationship model of learning outcomes and job ability

Discussion

Learning outcomes directly influence the job ability with statistical significance level of .01, conforming with findings of Arum et al. (2012) and Butler (2012). That is, Communication Arts students with high learning outcomes are expected to have high job ability. Meanwhile, Self-efficacy has both direct and indirect influence with highest overall influence on job ability and learning outcomes. This conforms with the self-efficacy awareness theory of Bandura (1986) which indicates that a method that can create a person's learning is when a

person has right awareness of self-efficacy so that such person can change the personal learning behavior. When persons believe that they have self-efficacy to learn, they are motivated to behave in doing anything based on their self-efficacy. They can certainly carry out their desired activities successfully with the highest efficiency. This conforms to the research by Siriparp (2015); Grigg et al. (2018) which found that students who have high learning outcomes also have a higher level of self-efficacy awareness than students who have low and moderate learning outcomes.

When considering the causal factor that influence the learning outcomes, it was found that learning strategy has the highest direct influence on learning outcomes. That is, students who have learning strategies can set guideline or design methods for their learning with clear aims and process to control themselves for being able to learn and effectively achieve their set goals. This agrees with many research findings, that effective learning strategy has a relationship with learning outcomes (Broadbent & Poon, 2015; Cordero and Gil-Izquierdo (2018). Furthermore, learning motivation and learning strategy is also a mediator that transfers influences from campus experience, teaching quality, and self-efficacy onto the learning outcomes. That is, if students have high self-efficacy awareness, received teacher's teaching quality and experience from the university, there will be learning motivation and they can well develop their own learning strategies. That will result in good learning outcomes for students, and consequently having job ability.

This conforms to the research by Hsieh (2014) which found that learning motivation was the factor which can forecast job ability, and it is also important for explaining learning outcomes. As such, when internal motivation is integrated with external motivation, students will be encouraged to improve their knowledge and ability for achieving their expectation. That is because motivation is an important factor that guides personal behavior and enables the person to face challenges leading to success or the set goal.

In this regard, another interesting finding from this research is that the campus experience and teaching quality do not have direct influence on learning outcome. This does not conform with the theory of I-E-O Model that refers to the situation where students gained experience from the organized environment and activities. Such findings show that students, presently in the Digital era, do not primarily focus on learning in the classroom to gain knowledge. They believe that knowledge can be attained from experiences outside the classroom such as internship, competitions in organized events, operational training, and learning via external social media by using modern technology. Therefore, gaining experience from the university does not have adequate influence on the learning outcomes. However, another important role of teachers, besides the transfer of knowledge, is to stimulate or encourage students to develop learning motivation and learning strategy so that students can find their desired needs, efficacy, and professional success, as these will also help students develop their learning outcomes and job ability. This conforms to the previous finding (Leon et al., 2017; Musah et al., 2015) that teaching quality has

indirect influence on learning outcome with statistical significance.

Recommendation

Regarding guidelines for development and curriculum management of communication arts, the agency responsible for specifying/overseeing policy should consider the modernity for social and technological changes in the digital era. It shall meet the requirements of both students and graduate users with emphasis on the course design that aims for outcomes or competency to support students' professions and success at work in the future. This will enable students to gain knowledge in combination with professional practical training, and integration between the content of various sciences and learning activities in the course, thus reducing redundancy of the content in each subject so that the course is not excessively structured. Also, importance is placed on building of academic and professional connection. In this regard, the course outcomes should support students to develop their character traits, operational skills and knowledge in accordance with the standard qualifications framework and standard professional practice for the communication arts profession as well as corresponding to requirements of consumers or graduate users.

Conflict of Interest

These is no conflict of interest.

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