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MESSAGE FROM THE HOSTING PARTNER ICEDU 2018

The University of Northern Colorado (UNC) is a proud hosting partner of the Fourth International Conference on Education to be held in Bangkok in April of 2018. This is our third time to collaborate with the International Institute on Knowledge Management to organize this important conference. The University is excited to be a part of a conference that allows scholars and practitioners in education from around the world, and especially South East Asia, to present their research and their practical ideas in order to enhance education.

We have a long tradition in education, having been founded in 1889 as a State Normal School to prepare elementary school teachers. Since then UNC has grown to become a comprehensive university of about 13,200 students that offers over 100 undergraduates programs and a wide range of graduate programs, especially in education. UNC prepares the largest number and broadest array of teachers in the Rocky Mountain Region of the United States. Our graduate programs, offered on campus and online, prepare educators for virtually every job in a school including superintendent, principal, teacher leader, teacher, educational coach, school psychologist, nurse, nutritionist, audiologist, and educators working with students with special needs, including the visually and hearing impaired.

UNC's education programs have earned a range of prestigious awards including the Christa McAulliffe Award for Excellence in Teacher Preparation. Some of our programs have been nationally ranked by US News and World Reports. Our faculty members publish in high quality journals and are regularly the recipients of large grants, such as a recent $2.2Million grant to collaborate with rural school districts in Colorado, USA.

This International Conference on Education fits with the mission of UNC to improve scholarship and educational practice worldwide. We believe that researchers and practitioners, coming together at conferences such as this one, can advance the quality of education received by students worldwide.

More information about UNC and our programs can be obtained from our website (www.unco.edu) or by talking to Eugene Sheehan (eugene.sheehan@unco.edu), Dean of the College of Education and Behavioral Sciences and Conference Chair, or Teresa McDevitt (Teresa.mcdevitt@gmail.com), conference keynote speaker and emeritus professor.

MESSAGE FROM THE CONFERENCE CHAIR ICEDU 2018

College of Education and Behavioral Sciences

Office of the Dean

Hello and welcome to Bangkok, Thailand, and to the Fourth International Conference on Education.

It is my great pleasure to serve as conference chair for the third time for the International Conference on Education, organized by the International Institute of Knowledge Management (TIIKM). The University of Northern Colorado (www.unco.edu), my home institution, is proud to be a hosting partner. I attended the first conference in Beijing and was chair for the last two conferences in Bangkok and Kuala Lumpur. Both conferences were lively events where education researchers and practitioners from around the world came together to discuss a wide array of important issues in education.

This year promises to be equally stimulating. The theme around *Sharing Knowledge, Building Dreams* is purposely broad so that we could have an eclectic array of papers ranging over a variety of themes including such topics as innovative educational practices, learning sciences, curriculum that works, and more. We will have about 150 papers from about 25 countries. So we are truly international.

I want to thank TIIKM for organizing the conference and for attending to all the logistical details including the hotel, meals, program, and all aspects of conference planning.

I hope during your time at the conference that you take the opportunity to engage with your peers to discuss your ideas for research and practice and that you ask questions of the presenters. There will be plenty of opportunities for collaboration. We will all benefit from our combined participation at this Fourth International Conference on Education.

I also hope you spend some time exploring Bangkok, one of my favourite cities.

Conference Chair ICEDU 2018,
Eugene P. Sheehan,
Dean, College of Education and Behavioural Sciences,
University of Northern Colorado,
USA.

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THE CAREER ADAPT-ABILITIES SCALE-INDONESIAN FORM: PSYCHOMETRIC PROPERTIES AND CONSTRUCT VALIDITY

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Abstract: Studying in college, students start thinking about the future, going to work after graduation, thinking of the desired job. Students learn about the various jobs that can be occupied according to the current education. Career development is very important all along. This study examines the psychometric behavior of career adaptation (CAAS) in Indonesia. CAAS consists of four subscales, each with six items to measure concern, control, curiosity and confidence. Participants in this study were students at one university in Surabaya, Indonesia (N = 281). This study analyzes the goodness of fit conceptual model on the students, validity and reliability of instrument discriminant. Test validity using Confirmatory Factor Analysis (CFA), and test reliability using Alpha Cronbach. The results provide strong psychometric support for CAAS-Indonesian Forms with a student subject as a valid measure to analyze their career adaptability. The factor structure of the CAAS-Indonesia is similar to the hierarchical four-factor model of the CAAS-International.

Keywords: Career adaptability, Career construction model, Psychometric properties Indonesia, college student

Introduction

A developmental stage between adolescence and adulthood is the emerging adulthood (Arnett, 2003). In this stage, each individual encounter developmental task to make decisions in term of their life commitment. Among others is career choice for future life (Schwartz, Côté, & Arnett, 2005). In general, one should be in college around this age. College students are at a point of their life in which they have to think about a career of their choice and how to achieve it (Chong & Leong, 2017). According to Super (1980), issues about career do not only happen to employed individuals, but to adolescents when they prepare themselves for career pursuit. Further, Skorikov (2007) suggests that lack of career preparation can have both direct and indirect effect on vocational problems.

As Buyukgoze-kavas (2014) reported, among the critical career issues in higher education are job decision and adaptation skill. Career adaptability plays an important role in career planning (Savickas & Porfeli, 2012; Savickas, 2009). Findings from previous studies show that career adaptability in education will affect academic satisfaction (Buyukgoze-kavas, Duffy, & Douglass, 2015, Hirschi, 2009); life satisfaction (Santilli, Marcionetti, & Nota, 2017), and academic achievement (i.e. Grand Point Academic) (Negru-subtirica & Pop, 2016). Individuals with strong future orientation have strong career planning as well, so they will perform better in college and vice versa (Negru-subtirica & Pop, 2016). A study by Merino-tejedor, Hontangas, and Boada-grau (2016) found that career adaptability correlated with academic fatigue and academic involvement. It implies that individuals with high career adaptability are inclined to highly involved in educational process at campus, in term of both academic and non-academic activities.

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Indonesian Context

Geographically, Indonesia is situated in between two continents, namely Asia and Australia and is also located in between two oceans, Indian Ocean and Pacific Ocean. Indonesia is an archipelago rich in cultures, ethnicities, customs, arts, attires, and languages. Regardless, the diversities are unified into one entity, hence the national motto "*Bhineka Tunggal Ika*" which means "unity in diversity". Also, Bahasa Indonesia is the lingua franca of Indonesia.

Indonesia is a developing country, so career issue is a relevant and important issue to discuss. How individuals choose a job, how to prepare themselves for their career of choice, how to achieve the favored career are deemed as individual responsibilities. Economic problems and labor challenges in today's globalization era urge people to be able to adapt to careers. A common problem is career adaptability in transitional period.

Indonesia is well-known for its highly collectivistic culture. According to Sawitri and Creed (2015), in term of career, Indonesia has collectivistic contexts. In collectivistic cultures, many activities are intended to show respects for others, for instance to make parents proud and satisfied including in choosing a career. Hence, career adaptability is a vital facet for Indonesian students. Students get into college with various background stories, such as choosing a particular major to respect parents' choice, or to make them proud although the students themselves are lacking of personal interest in the particular major.

Therefore, students in college are facing issues with their career choice and career adaptability which resulted from their decision about their education and career of choice that is affected by their environment. In order to deal with this problem, individual adaptability is necessary for students to be able to feel comfort during their study and to eventually achieve success both in education and working life. A longitudinal study showed that adolescents with better career adaptability were more like to succeed in mastering vocational transition (Creed, Muller, & Patton, 2003). Vocational refers to individual response in choosing and adapting to the opted university program (Savickas in Brown, 2002). Transition, in this case, is a change pertaining to the educational demands and the learned skills in education which relate to careers.

Career adaptability

Adaptability is "the quality of being able to change, without great difficulty, to fit new or changed circumstances" (Savickas, 2007). Further, adaptability is conceptualized as the ability or resource that individuals have to behave while facing a changing condition. It helps individuals to shape their strategy in directing adaptive behavior (Savickas & Porfeli, 2012). Career adaptability is a concept describing individual's ability to make decision about planning and self-efficacy to succeed in transition of selecting a major in university (Creed *et al*, 2003). In addition, Savickas (2007) explains that career adaptability is a psychosocial construct which indicates individual resource to deal with current task and to anticipate development, occupational transition, and occupational trauma which, to a great or lesser degree, change individual's social integrity.

There are four dimensions of career adaptability which shape individual's strategy to flexibly act when dealing with career assignment. They are concern, control, curiosity, and confidence. Concern is the care about the future which helps one to see forward and prepare for what might happen next. Control enables individual to be responsible to shape themselves and their environment to meet what might happen next through self-discipline, effort, and perseverance. Possible selves and alternative scenarios are explored when curiosity encourages oneself to think about themselves in various situations and roles. The experience of such exploration and information-seeking activities might results in some aspirations and builds one's confidence that they can actualize choices to implement their life design (Porfeli & Savickas, 2012).

Career Adapt-Adaptabilities Scale

An internationally standardized measure to assess career adaptability is Career Adapt-Abilities Scale (CAAS). The CAAS has been tested internationally in 13 countries and proven to have great reliability for its application in several different cultural contexts. CAAS-International version consists of 24 items, comprising four dimensions, namely concern, control, curiosity, and confidence (Porfeli & Savickas, 2012). This scale has also been used in a number of researches in educational contexts across various nations and shown good validity and reliability (Buyukgoze-kavas, 2014; Guan *et al*, 2015; Merino-tejedor *et al*, 2016; Olugbade, 2016; Tian & Fan, 2014). However, Porfeli and Savickas (2012) reported that cross-cultural and cross-lingual differences are indeed an important factor affecting the scale's validity and reliability.

Research Objective

The objective of this research is to test the psychometric properties, such as item statistics and internal consistency estimates, of CAAS-Indonesian Form in order to determine its usability in Indonesian culture.

Method

Participant

Participants in this research were 281 students of a private university in Surabaya Indonesia, consisting of 151 males and 130 females. The age of participants ranged from 17 to 22 years old.

Procedure

Data collection was conducted through direct questionnaire completion. Data was collected in classrooms following lectures and after permissions were obtained from the lecturers. Authors provided guidelines to fill out the questionnaire and waited until all participants finished completing it.

Measures

Career adaptability was measured using Indonesian version of CAAS (Savickas & Porfeli, 2012). The adaptation procedure complied with the steps suggested by Wild *et al* (2005). The initial step was preparation, wherein authors reviewed literatures concerning career adaptability. In some articles, authors found the CAAS-International Form (Savickas & Porfeli, 2012). The second step was forward translation, in which the CAAS was translated from English to Indonesian. Two expert translators were involved, one of them is a lecturer with psychology background and the other is a lecturer with an English background. Both translations were conducted separately. The third step was reconciliation, where the two translations were assessed in term of their equality and were then discussed with a moderator. After the discussion with a moderator, a single version of translation was agreed upon. Then the fourth step was back translation. The Indonesian translation of the CAAS was translated back to English by a professional translator. The following step was harmonization, in which the back translation was compared with the original version of the scale. The comparison showed that there were some differences in word selection, but after a recheck on the meaning of the differing words, those words actually share the same meanings, hence needed to be aligned. The next step was cognitive debriefing, in this step the translated CAAS was given to two students and a lecturer for them to read and to understand, so it would ensure that the diction is understandable for students. Author also conducted interviews with those three people concerning the translated items. The final steps were review of cognitive debriefing results and finalization, wherein the responses from the three readers were analyzed which resulted in a version that can be well understood.

The CAAS-Indonesian Form was developed based on the CAAS International Form 2.0 (Savickas & Porfeli, 2012) which consists of 24 items to assess individual's career adaptability. The 24 items are divided equally into four subscales representing each dimension of career adaptability, namely career concern, career control, career curiosity, and career confidence. The response set uses five-point Likert scaling, ranging from 1 (not strong) to 5 (strongest)

Savickas and Porfeli (2012) reported the internal consistency reliability of the CAAS-International Form for each dimension as follow: 0.83 (career concern), 0.74 (career control), 0.79 (career curiosity), and 0.85 (career confidence); and also 0.92 for all items. In this research, the reliability estimate of the CAAS-Indonesian Form as a whole is 0.91. For each subscale, the estimates are as follow: 0.84 (career concern), 0.85 (career control), 0.83 (career curiosity), and 0.84 (career confidence). Table 1 provides details of the reliability estimates.

Table 1 Career Adapt Abilities Scale (CAAS)-Indonesian Form: Item Descriptive Statistics, and standardized factor loadings

Construct		Item (first order indicator)	Indonesian translation	Mean	SD	Loading factor	α
Concern	1	Thinking about what my future will be like	*Memikirkan seperti apa masa depan saya kelak*	4.39	0.76	0.63	0.84
	2	Realizing that today's choices shape my future	*Menyadari bahwa pilihan di hari ini menentukan masa depan saya*	4.23	0.91	0.59	
	3	Preparing for the future	*Menyiapkan masa depan saya*	4.25	0.87	0.76	
	4	Becoming aware of the educational and career choices that I must make	*Menjadi peduli pada pilihan pendidikan dan kejuruan yang harus saya tempuh*	3.97	0.87	0.65	
	5	Planning how to achieve my goals	*Merencanakan bagaimana cara mencapai tujuan saya*	4.07	0.85	0.77	
	6	Concerned about my career	*Memperhatikan mengenai karier saya*	4.13	0.85	0.75	
Control	7	Keeping upbeat	*Tetap Optimis*	4.19	0.91	0.65	0.85
	8	Making decisions by myself	*Membuat keputusan saya sendiri*	3.69	0.93	0.66	
	9	Taking responsibility for my actions	*Bertanggung jawab atas tindakan saya*	4.09	0.89	0.73	
	10	Sticking up for my beliefs	*Mempertahankan kepercayaan saya*	4.04	0.96	0.79	
	11	Counting on myself	*Mempercayai diri sendiri*	4.07	1.01	0.77	
	12	Doing what's right for me	*Melakukan apa yang baik menurut saya*	4.08	0.89	0.66	
Curiosity	13	Exploring my surroundings	*Mengeksplorasi lingkungan sekitar*	3.58	1.00	0.57	0.83
	14	Looking for opportunities to grow as a person	*Mencari kesempatan untuk berkembang sebagai seorang individu*	3.70	1.04	0.60	
	15	Investigating options	*Mencari tahu alternatif*	3.62	0.94	0.67	

		before making a choice	*sebelum menentukan pilihan*				
	16	Observing different ways of doing things	*Mengamati cara-cara yang berbeda dalam melakukan sesuatu*	3.64	0.97	0.76	
	17	Probing deeply into questions I have	*Menggali lebih dalam pertanyaan yang saya miliki*	3.53	0.98	0.75	
	18	Becoming curious about new opportunities	*Ingin tahu tentang peluang-peluang baru*	3.99	0.88	0.70	
Confidence	19	Performing tasks efficiently	*Mengerjakan tugas secara efisien*	3.56	0.95	0.71	0.84
	20	Taking care to do things well	*Berhati-hati dalam melakukan sesuatu dengan baik*	3.91	0.90	0.70	
	21	Learning new skills	*Mempelajari keterampilan baru*	3.77	0.94	0.72	
	22	Working up to my ability	*Bekerja hingga batas kemampuan saya*	3.85	0.95	0.61	
	23	Overcoming obstacles	*Menaklukkan rintangan*	3.77	0.98	0.71	
	24	Solving problems	*Menyelesaikan masalah*	3.93	0.96	0.72	
		Construct (second-order indicators)					
Career Adaptability	1	Concern		4.17	3.86	0.79	0.91
	2	Control		4.02	4.30	0.89	
	3	Curiosity		3.67	4.28	0.85	
	4	Confidence		3.79	2.31	0.88	

Result

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted to test whether the grouping of the indicators of career adaptability based on theoretical construct was consistent when implemented on a sample of Indonesian students (Sarjono & Julianita, 2015). Referring to the original article of CAAS-International Form (Savickas & Porfeli, 2012), hierarchical model was constructed from four subscales of CAAS and one general factor of career adaptability. CFA showed that the data of CAAS-Indonesian Form was consistent with its proposed theoretical model. Model fit indices are as follow: χ^2 = 494.23; df =128; p ≥ .05; RMSEA= .06; GFI= .87; AGFI= .84; CFI= 098. The loading factors of each subscale shown in Table 1 suggest that all items are strong indicators of the second order constructs, which in turn are also strong indicators of career adaptability.

Model factor of the CAAS Indonesia and Model Factor of the CAAS International

The loading factors of items in CAAS-Indonesian Form are similar to those of CAAS-International Form. In the CAAS-Indonesian Form, the factor loading of the first item of concern subscale ("Thinking about what my future will be like") was 0.63, the first item of control subscale ("Keeping upbeat") was 0.65, the first item of curiosity subscale ("Exploring my surroundings") was 0.57, and the first item of confidence subscale ("Performing tasks efficiently") was 0.71. Meanwhile in the CAAS-International Form, they were respectively 0.65 (concern), 0.48 (control), 0.62 (curiosity), and 0.60 (confidence). The loading factors of control and confidence in the CAAS-Indonesian sample were higher than those of CAAS-International.

The factor loading of the second item of concern subscales ("Realizing that today's choices shape my future") was 0.59, that of control's second item ("Making decision by myself") was 0.66, that of curiosity's second item ("Looking for opportunities to grow as a person") was 0.60, and that of confidence's second item ("Performing tasks efficiently") was 0.71 in the sample for CAAS-Indonesian Form. In the CAAS-International, the factor loadings were respectively 0.61 (concern), 0.58 (control), 0.69 (curiosity), and 0.66 (confidence). The loading factors of control and confidence subscale were higher in CAAS-Indonesian sample compared to those in CAAS-International sample.

If compared as a whole scale, the loading factor of control subscale in CAAS-Indonesian Form was higher than that of CAAS-International Form.

Loading factors of the second-order constructs in CAAS-Indonesian Form were 0.79 for concern, 0.89 for control, 0.85 for curiosity, and 0.88 for confidence, while in CAAS-International Form, they were 0.78 for concern, 0.86 for control, 0.88 for curiosity, and 0.90 for confidence. Overall, the loading factors of concern and control construct in CAAS-Indonesian Form were higher than in CAAS-International Form.

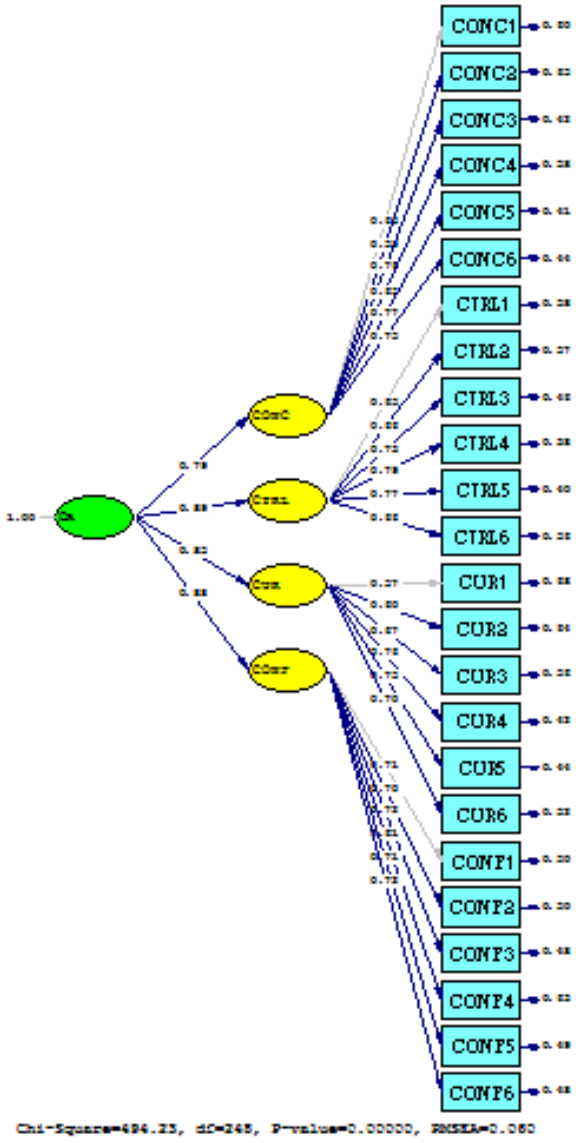

Figure 1 Measurement model of CAAS-Indonesia

Discussion

This research aimed to test the psychometric properties of CAAS-Indonesian Form in student sample. Statistical analysis provided evidence that CAAS-Indonesian Form shares similar with CAAS-International Form in term of factor structure and psychometric properties. The whole scale of career adaptability and its four subscales showed good internal consistency estimate in accordance with the proposed theoretical model. This finding enables further in-depth exploration of psychometric properties of the CAAS-Indonesian Form. It also suggests that CAAS-Indonesian Form can be used by researchers, psychologists, and career counselor to assess student's career adaptability in Indonesia.

The results also show that the loading factors of each item in control subscale of CAAS-Indonesia were higher than those of CAAS-International. The overall control subscale also had higher loading compared to other subscales. It suggests that Indonesian students had higher degree of control in preparing the future of their career. Individuals feel responsible to shape themselves and their environment to meet the career demands using self-discipline, effort, and perseverance. Career context in Indonesia which demands each individual to face

competition in workplace seems to have driven individual to put a great deal of effort in controlling themselves so that they can actualize their desire for success in career.

Conclusion

The result of this research shows that the CAAS-Indonesian Form and the CAAS-International Form have the same function. This finding can be used for researchers and practitioners who are interested to assess career adaptability in students, both for research or career counseling purposes.

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ACCEPTANCE OF INCLUSION AMONG REGULAR EDUCATION TEACHERS IN THE PHILIPPINES

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Abstract: For more than a century, Filipino children with disabilities (CWDs) were placed in special classes according to their presenting educational needs. But in support of the global call for equal and equitable education, and that of upholding the CWDs' human right to be educated alongside peers in the regular education (RE) classroom, the Philippine education system has declared itself inclusive. The issue of its acceptance by RE teachers was raised. Mixed method research was conducted during a seminar/workshop that defined inclusion and discussed inclusive teaching strategies. Convenient sampling had 199 pre-seminar and post-seminar survey respondents in conference attendees. Focus group discussion (FGD) divided the participants by regions of origin to discuss in depth the possible impact of the nationwide implementation of inclusion to the teaching and learning process. Pre-seminar survey results showed that 80% of the respondents initially favored inclusion. Post-seminar survey and FGD results showed that majority of the respondents at 97% shifted preference to mainstreaming. This was explained by the following: 1) confusion in the meaning of terms: mainstreaming was being practiced but understood to be inclusion; 2) the zero-reject policy in the public school system includes children with behavioral disorders and raised safety concerns; and 3) the RE teachers lack expertise and experience in handling CWDs in the RE classroom. Recommended were clarification on the definition of terms so the RE teachers would know the scope of their work and the extent of their responsibilities; intensive training in Special Education, and more researches on educational placement.

Keywords: integration, mainstreaming, inclusion

Introduction

Special Education has been in existence in the Philippines for more than a century. It opened its first school in the country in 1907, the Insular School for the Deaf and the Blind (Inciong, 2005, Consolacion, N.D.,) catering to the needs of leaners with sensorial disabilities. Highly segregated, it addressed issues presented by blindness and hearing difficulties that could not then be addressed by the regular education (RE) curriculum. The field has evolved through the years and addressed other conditions that required very particular curriculum content, delivery system, evaluation, learning environment, and teaching personnel: physical disabilities (1945), intellectual disability (1953), emotional and behavioral disabilities (1962), and giftedness (1963) (Consolacion, N.D.). Increasing disability awareness in the succeeding years addressed issues on autism, learning disabilities, communication disorders, attention deficit and hyperactivity disorder, and other health impairments and conditions that can get in the way of learning.

Filipino children with disabilities (CWDs) were placed in special classes according to their presenting educational needs. Segregation was a local and global practice, highly justified by the then inability of the RE system to teach learners with special needs in the RE classroom. The RE teachers lacked or had no training in Special Education, and could not effectively teach them while teaching the RE students as well. Segregation was actually done to accord CWDs equal opportunities in learning (Hunt, J. T., 1957).

But while such segregation has its purpose and merits, some people deemed it unfair and fought for the right of special learners to be educated in the regular education classroom. Part of the argument was based on the US

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Supreme Court decision on the landmark case of Brown versus the Board of Education of Topeka in 1954 which ruled that separation is not equal, and ended the legal segregation of colored and white children (Justia, 2018). While the latter was a racial discrimination case, it proved instrumental in the crafting of laws and policies on segregation and integration especially in education.

No less than the United Nations advocate for the right of all children to be integrated in the RE system. The then Millennium Development Goal 2: Achieve Universal Primary Education, aimed to eradicate poverty by 2015, in part, by giving all children equal access to primary education (United Nations, N.D.). The present Sustainable Development Goal 4: Ensure Inclusive and Equitable Quality Education and Promote Lifelong Learning Opportunities for All aims to ensure that equal and equitable educational opportunities are accessible even in higher education, including colleges and universities (United Nations, N.D.).

In support of the call to uphold the CWDs' human right to be educated alongside peers in the regular education classroom, and that of the global call for equal and equitable education, the Philippine education system has declared itself inclusive. As inclusion puts the Filipino CWDs under the direct responsibility of the RE teachers, the issue of its acceptance by the latter was raised: how are they reacting to the nationwide implementation of inclusion?

This study forms part of a bigger research on the acceptance of inclusion as an educational system in the country by the members of the Philippine society where situational analysis further looks into the implications of the paradigm shift.

Related Literature

The educational placement of learners with very particular needs has always been a sensitive issue. The question on what merits integration into, and segregation from, the regular education system has been debated over and over. An online search on educational placement and rights of persons with disabilities will yield results on studies published in academic journals, local and international laws and policies, and opinionated blogs and articles. Global and local citizens have vastly differing views on where and how special children should be best educated. Evelyn Deno (1970) proposed a cascade of services, ranging from the most integrated to the most segregated, catering to all imaginable educational placement needs with varied support via adaptation in the delivery system. This supports the standpoint of Hunt (1957) on segregation actually according CWDs equal learning opportunities.

Four of the more popular educational placement options in the continuum of services are integration, mainstreaming, inclusion, and special classes (segregation). The first three have been used interchangeably by some; and explicitly differentiated by others. Confusion in definition might be explained by the fact that these are very common terms of everyday usage that have been assigned particular meanings in the education community. The following traces history and defines each.

> ***Integration*** was one of the major goals achieved by the Civil Rights Movement (Library of Congress, 2018) and is primarily a legal term (AIR, 2017). It is a "carry over from the civil rights/racial desegregation legislation of the 1960s and before;" and goes beyond the physical integration of children from marginalized groups into society, including but not limited to, academics and social integration (AIR, 2017). But integration puts the burden of adaptation on the children and those who could not cope were pulled out from the RE to join special classes (Thomazet, 2008). For more severe disabilities, integration has been reduced to joining RE in non-academic classes, mostly for socialization purposes.
>
> ***Mainstreaming*** is a form of integration. It is selective in nature. In the Individuals with Disabilities Education Act (IDEA) of the United States of America, it is often

referred to as the least restrictive environment (LRE) that a child can be placed in as long as it provides him/her with appropriate education (Wright and Wright, 2018). It assumes that the "student must earn his or her opportunity to be mainstreamed through the ability to keep up with the work assigned by the teacher to the other students in the class" (Rogers, 1993 as cited in AIR, 2018). The primary responsibility of educating the children remained with the Special Education teacher (AIR, 2017).

Inclusion is not mandated by law and is not a legal term. It represented a paradigm shift from the highly criticized integration of the early years to the inclusive education of the Regular Education Initiative (REI), a movement that advocated for the merger of RE and Special Education (Wang, et al. 1986, as cited by Thomazet, 2008). Instead of the child adapting to the learning environment and complying with its requirements, the tables have been turned: the burden has been put on the school institution to educate the child in the most effective way possible in the company of RE students without disabilities. The primary responsibility of educating the children has been passed on to the RE teacher (Thomazet, 2008).

The Regular Education Initiative (REI) was proposed by the then US Assistant Secretary for the Office of Special Education and Rehabilitative Services Madeline Will to form a partnership between RE and Special Education. It invited varying interpretations, and two of the most popular were written by Fuchs and Fuchs (1998) and Wang and Walbert (1998), in criticism and in support of, respectively. Wang and Walbert (1998) wrote the Four Fallacies of Segregationism to clarify what REI is all about. It claimed that contrary to the misinterpretation, the said partnership was not designed to "eliminate or subordinate special education services," but proposes a "shared responsibility" between the two systems. The REI then brings back the CWDs to the RE classroom but brings back Special Education with it, calling for the improvement in delivery system via continuous experimentation. Fuchs & Fuchs (1998) in reply pointed out the efficacy of the Special Education system in addressing the unique needs of CWDs; and the argument that "careful consideration of students and (educational) settings must precede the widespread implementation of large-scale full time mainstreaming" by citing studies. They reacted strongly to the supposed devaluing of special education where special educators were seen as predators and non-educators.

The existence of opposing views is not only inevitable but understandable. The REI and the possible total shift to inclusive education could shake up the Special Education field and question its ontology and epistemology. Is Special Education giving or hindering equal and equitable educational opportunities to children with diverse needs? Is it helping them by giving them placement options under a continuum of services, planned learning environments, specialized teaching materials, highly trained teachers, and differentiated instruction and evaluation? Or is it curtailing their human right to be educated in the mainstream by even considering pulling them out of the classroom for remedial or special classes? While Special Education began with the worthiest of intensions (the former), it is now being regarded as oppressive (the latter), and something to be avoided at all costs given the call for equality and equity.

Global support for inclusion abounds. The Salamanca Statement and Framework of Action on Special Needs Education, better known worldwide by its shorter title of The Salamanca Statement, was adopted by the World Conference on Special Needs Education held in in Salamanca, Spain in 1994 (CSIE, 2018). It upheld the fundamental principle that "all children should learn together, wherever possible, regardless of any difficulties or differences that they may have" (Inciong, 2005).

The United Nations, through the United Nations Educational, Scientific and Cultural Organization (UNESCO) sees inclusion as supportive of the bigger program of Education for All. It views it as "a dynamic approach of responding positively to pupil diversity and of seeing individual differences not as problems, but as opportunities for enriching learning." At its core is one's right to equal and equitable educational opportunities, as stated by the Universal Declaration of Human Rights in 1948 (UNESCO, 2005).

Through the years, inclusion became a byword, representing the most desired educational placement by groups advocating for the children's human right to non-selective integration.

Methodology

This study looked into the acceptance of RE teachers of inclusion as an educational system through quantitative and qualitative lenses. Mixed method research was conducted, employing pre-seminar and post-seminar oral surveys and focus group discussions (FGD).

Convenient sampling had 199 respondents in conference attendees. FGD divided the participants by regions of origin to discuss in depth the possible impact of the nationwide implementation of inclusion to the teaching and learning process.

Results and Discussion

During the seminar, the different educational placements available to students manifesting learning difficulties were presented and defined to introduce the concept of inclusion. The purpose and target clientele of each were discussed in depth. The workshop that followed on inclusive teaching strategies focused on practical interventions for common learning issues and materials production.

The pre-seminar survey was conducted to determine who among the teachers undergoing training in inclusive teaching strategies were actually in favor of the system. It rested on the premise that before one can be effective in delivery, one has to have an unwavering faith in it. 80% signified that they were in favor of inclusion. After the seminar/workshop, post-seminar survey and FGD results showed that majority of the respondents at 97% shifted preference to mainstreaming. This was explained by the following:

1. There was confusion in the meaning of terms

Some of the respondents/conference attendees were already practicing mainstreaming where the CWDs were placed in RE based on their ability to adapt. The CWDs were given assistance via pull-out, remedial classes, and shadow teaching. This definition is consistent with the one given in the study of Rogers in 1993 (as cited in AIR, 2017), which assumed that the "student must earn his or her opportunity to be mainstreamed through the ability to keep up with the work assigned by the teacher to the other students in the class."

This type of integration, however, is called *inclusion* in the public schools. The children were not placed in classes solely on the basis of human rights, but on the CWD's educational needs and ability to cope as well. Thus, the pre-survey resulted in 80% of the respondents favoring inclusion when they were actually favoring mainstreaming.

With the REI proposing "shared responsibility" instead of the misconception that the RE teacher will be solely responsible for the education of the CWD, 97% were willing to give inclusion a chance.

2. There is zero-reject policy in the public school system

While majority of the attendees were willing to integrate CWDs in the RE classroom, the inclusion of children manifesting severe behavioral disorders raised safety concerns for both the teachers and the students. Questions

on proper intervention, qualified personnel to administer such intervention, and the rights of teachers and students to a safe learning environment were asked.

FGD allowed the respondents to share their classroom experiences in handling such cases. Filipino humor made otherwise depressing stories light, as they talked about their feelings of frustration and helplessness in encountering aggression in class. The teachers have very little knowledge on what could really work and some were employing trial and error. Success stories were few and far between and the need for training in behavior management was expressed.

3. RE teachers lack expertise and experience in Special Education:

Special Education as an undergraduate program takes about 4 years to complete. The graduates are highly trained in handling CWD issues to maximize potential. For RE teachers, determining potential and contextualizing the curriculum would require intensive training and acculturation. They would need to know the nature and characteristics of the different disabling conditions.

The conference attendees were just starting to learn about inclusive teaching strategies in a 3-day seminar/workshop and deemed themselves inadequate to teach CWDs in RE full time. Willingness and eagerness were expressed but they wanted more preparation in order to be effective in delivery. While the positive impact of inclusion could be huge for CWDs, the possible negative impact of the lack of readiness on the part of teachers could be just as huge for all stakeholders, echoing the concerns raised by Fuchs & Fuchs (1998).

Conclusion and Recommendations

The result of the initial study on the acceptance of inclusion by the RE teachers is actually positive. Favoring mainstreaming was indicative of readiness—or the lack of it—at this point. The attendees did not reject the idea of an inclusive system. They were more than willing to include CWDs in their classes but needed more time and training to better prepare themselves for the task. The following recommendations were thus given:

1. Clarification on the definition of terms

There is a need to clarify the definition of integration, mainstreaming, and inclusion. While integration and mainstreaming are legal terms, inclusion is not. There are different definitions of inclusion with some versions resembling integration and mainstreaming.

The RE teachers need to know the scope of their work under the inclusive system of education. They need to know their exact duties and responsibilities, given that they would be the ones primarily responsible for the education of the CWDs. They need to know how they can effectively partner with the Special Education teachers to ensure that the CWDs are actually accorded equal and equitable educational opportunities.

2. Intensive training in Special Education

Special Education was not part of the pre-service training of the RE teachers until very recently. Chances are high that like the conference attendees, other RE teachers would need intensive training on the nature and characteristics of disabilities for acculturation purposes, and intensive training on the teaching and learning process in Special Education, including but not limited to differentiated instruction, differentiated evaluation, and behavior management.

3. More researches on educational placement

Based on the exchanges between Fuchs and Fuchs (1998) and Wang and Walbert (1998), the pros and cons of inclusion can be quite overwhelming. Add to these the global push for inclusion, the international policies

advocating for equality and equity, and the legal issues on placement, and one can only surmise the kind of challenge that the RE and Special Education teachers could be up against. Recommended are more researches on the acceptance and actual implementation of inclusion in the Philippines.

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PREFERRED COMMUNICATION CHANNELS AMONG OMANI STUDENTS FOR ACADEMIC ADVISING

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Abstract: Academic advising has gained more focus in contemporary research, literature, and policy so far, but it still faces several difficulties such as miss-communication with students. This paper explores the preferred communication channels among Omani students to contact their advisors to make the academic advising process more activated, flow, and efficient. For this purpose, 250 students at different levels at Al Buraimi University College have been selected randomly and were presented with a questionnaire about their perception towards the communication channels with academic advisors. Results indicated that face-to-face communication is a preferable method among students followed by email, social media, and phone calls.

Keywords: Academic advising; Student access; Communication channels

Introduction

The professional literature has repeatedly emphasized that the academic advising of students is a highly important issue to avoid academic failure. Student's decision to remain in college becomes a big challenge facing most of the countries. However, the studies which have been carried out so far have shown that contact with an academic advisor in higher education is a crucial factor in a student's decision to remain or leave the college. Academic advising is a plan outlay or process that is designed at enabling students to be in a position to approach and handle matters about education in a way that is well organized and meaningful to them (Cook, 1999). Advising students in bringing together all the students that might come up in the academic lives of students (Hughey, 2011).

Some of these matters might turn into being very complicated if an excellent advising model is not in place. Student's retention is one of the standard problems that have been identified in many colleges and universities; this has been contributed a lot to the population of students who have left schools (Heiserer, 2002). Other matters that have been reported include issues related to discipline, student performance, and the general student behaviours. These difficulties can be used to categorize students in schools, for instance, students can be classified as being academically at risk or academically safe students (Cejda, 2006).

Lack of adequate communication skills on the part of the advisor may also hinder the advising program in institutions (Poyrazli, 2002). These entail using the communication techniques which cannot lead to successful sharing of information between the advisor and the advisee. For instance, not paying attention to the students' queries by not addressing their questions properly and thinking of a response when the advisee is still talking (O'Bannon, 1994).

For that reason, the advisors should develop proper communication techniques like maintaining eye contact during the session and responding appropriately to advisee's questions. Finally, the advising programs should aim to promote the performances of the students and offer assistance in the correction of the students with severe behaviours which might lead to their poor performance (Crookston, 1972). New technological methods such as social media would be helpful in communicating with students. Some findings indicated that participants who used the electronic social networks might be beneficial for seeking help and were receptive to interacting with students (Paul & Julie, 2013). An integrated E- academic advising system could help to solve the communication issue and would save the time for face-to-face (Amin & Fekry, 2015).

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This paper explores the preferred communication channels among Omani students to contact their advisors to make the academic advising process more activated, flow, and efficient. In the next section, a literature review is introduced. Section 3 presents both questions and hypotheses of research. The methodology of this research is provided in Section 4. The results and the concluding remarks are included in Sections 5 and 6.

Literature Review

There is a considerable research literature on academic advising which has become an important process and prominently features in the modern education system world over. Academic advising has gained more focus in contemporary research, literature, and policy so far. Therefore, it is upon the learning institutions to come up with a well-designed and planned academic advising model as well as a good support program which can be used to address the demands of those students categorized as academic at-risk students (Haig, 2011).

The programs that are typically implemented in the educational institution mainly aim at boosting the school performance of these types of students by helping them to achieve their personal, academic and career targets or aims. They should also be aimed at resulting in the retention of the students in schools (Bierema, 2002). Therefore, all the academic institutions, for instance, universities should come up with an advising initiative that will adequately address the needs of these academic at-risk students. The advising model aims at reducing the academic cases like the poor performance of students which might result in their suspension (Broughton, 2001).

Some of the academic advising models that have been put in place to address these issues include; the prescriptive advising model which mostly concentrates on the relationship that exists between the advisor and the advisee based on the authority that entails handing down of the required advice. The development model builds on an equal relationship that exists between the advisor and the advisee (Broughton, 2001). It aims at promoting the personal growth of the student. The integrated advising model aims at addressing the shortcomings that exist in both developmental and prescriptive advising model. The last model is the intrusive advising model which recognizes the specific needs of the academic at-risk students (Bickel, 2005).

For instance, the model helps in reducing the issues involving discipline and performance of this kind of students. While trying to implement some of this kind of academic advising model, to be specific the intrusive advising model, the advisors have been going through various communication challenges which have been able to hinder the implementation of the advising programs in both colleges and universities (Moyer, 1999).

Some of these difficulties might have been originated from the advisors or the advisees. Some of the communication challenges that do affect the implementation of the advising programs in the institutions are as discussed below.

First, the disorganization of the advising sessions. It is true that the institutions may have been able to come up the relevant advising programs (Habley, 1986). Although these sessions have been planned, the problem is that sometimes the advisors do not allocate more time to enable students. The advisor needs to know the advisee's name, they sometimes don't have academic records of the students, and they even don't give them the required attention that can help solve the students' needs (Kolanko, 2006). The disorganization of the session has affected the implementation of the advising programs in institutions. Consequently, for some programmes which need to be implemented, the advisors need to organize their sessions in a manner that they get to know the students. Also, it is essential to have the relevant academic records for the students and be able to entirely give attention to the needs of the at-risk students in both universities and colleges (Lau, 2003).

Second, the external distractions also act as one of the significant communication challenges that affect the implementation of the advising programs in the institutions (Bardovi-Harlig, 1990). It is true that the institutions could be having the right and organized academic advising programmes, but the immediate surrounding might not be in a position to support this kind of programs (Campbell, 2007). These immediate environments do

interfere with the exchange of thoughts between the advisor and the advisee. Some of these factors include; noise, the room temperatures, uncomfortable seating, and lighting. These mostly concern the advisors while the students' distracters include; using phones during the session and coming with friends to the advisory rooms (Gordon, 2011). Thus, the advisory rooms should be situated away from noisy places, and students should be advised to switch off their phones during the counselling sessions.

Research Questions and Hypotheses

1. Which ways are more effective for communication between Oman's students and their academic advisors?
2. Is there an association between independent demographic and educational variables and preferring communication ways?
3. This study hypothesized that:
4. H_1: Face-to-Face is the effective and preferred way of communication.
5. H_2: There is a relationship between the preferred communication way and some of the independent demographic and educational variables.

Methodology

This study used the inductive approach to explore and describe the effective communication ways between Oman's students and their academic advisors. This approach was used to generate a new theory based on concrete empirical evidence for inferencing and extracting abstract concepts and theoretical relationships (Bernard & Bernard, 2012). However, the exploratory and descriptive research was conducted to increase our knowledge and gain a better understanding of a situation. Neuman (2011) pointed out that using these methods would help in obtaining a clear picture of the specific details of a situation such as a social setting and a relationship as it naturally occurs.

A 12-item questionnaire was randomly distributed to 250 students at AL Buraimi University College. The raw data of this questionnaire were analyzed using the Statistical Package for the Social Sciences (SPSTUDENTS), version 22. The questionnaire was structured and posed the questions articulated and directed for considering the validity of content, and eliminating the possibility of misinterpretations. It is clear that the reliability refers to the degree of consistency of the collected data to measure what it is supposed to measure by using Cronbach's alpha coefficient. Since that coefficient shows the degree to which all the items in a test measure the same attribute (Masitsa, 2011). Tavakol and Dennick (2011) mentioned that the reliability and validity are mandatory for accuracy to the interpretation of research data. The Cronbach alpha of this questionnaire was calculated and found to be 0.73 which is reasonable and feasible since an acceptable value must lie between 0.70 and 0.90 (Hof, 2012).

Results

From the all distributed questionnaires, 59% were completed by the female while male totalled 41%. Regarding participant's specialization 9% of were done by the English students, followed by the information technology students with 16%, then 34% are for Busines students and accounting, whereas the Law students did the 40%. The participants were asked about their educational level, which is classified into four academic years; one, two, three and four. The results indicate that the majority of the participants in the 1st year prefer face-to-face, followed by 3rd year students with 60%. During the 2nd year, students have the total of 55% compared to the 37% in the 4th year students. Most of the participants were in the first and second year.

Table 1: Summary of Sample

	Frequency	Percentage %
Gender		
Male	103.00	41%
Female	147.00	59%
Specialty		
English	23.00	9%
Business students & Accounting	86.00	34%
Law	100.00	40%
Information Technology	41.00	16%
Educational level		
First Year	96.00	38%
Second Year	116.00	46%
Third Year	30.00	12%
Fourth	8.00	3%
Employment status		
Employee	60.00	24%
Unemployed	190.00	76%
Marital status		
Married	68.00	27%
Single	182.00	73%
Age		
18-20	82.00	33%
20-22	75.00	30%
22-24	26.00	10%
Over 24	67.00	27%
Grade point average		
Less than 1.5	7.00	3%
1.5 - 2	49.00	20%
2 - 2.5	59.00	24%
2.5 - 3	73.00	29%
Over 3	62.00	25%

As it is presented in Table 1, 24% of the participants are employed, where the majority which makes the total of 76% is not. It also shows that 27% are married, while the majority which is 73% are single. The table indicated that 27%, of participant's age, is between 18 to 24 and over 24 years respectively. The grade point average has been displayed in the survey. The results illustrate the grades of participants with 3% less than 1.5. Moreover, 20% of the sample GPA is between 1.5 to 2.0. Moreover, 24% of them between 2.0 to 2.5. At the same time, the majority has 2.5 to 3 GPA, and the rest have GPA above 3.

Table 2: Percentages Distribution for Preferred communication channels of students

	Face-to-Face	Email	Phone call	Social media
Gender				
Male	60.2%	11.7%	13.6%	14.6%
Female	62.6%	18.4%	3.4%	15.6%
Specialty				
English	52.2%	13.0%	13.0%	21.7%
Business&Accounting	79.1%	8.1%	1.2%	11.6%
Law	52.0%	14.0%	15.0%	19.0%
Information Technology	53.7%	36.6%	0.0%	9.8%
Educational level				
First Year	71.9%	10.4%	5.2%	12.5%
Second Year	55.2%	19.8%	10.3%	14.7%
Third Year	60.0%	16.7%	0.0%	23.3%
Fourth	37.5%	12.5%	25.0%	25.0%
Employment status				
Employee	55.9%	15.3%	13.6%	15.3%
Unemployed	63.7%	15.8%	5.8%	14.7%
Marital status				
Married	57.4%	14.7%	10.3%	17.6%
Single	63.2%	15.9%	6.6%	14.3%
Age				
18-20	57.3%	23.2%	3.7%	15.9%
20-22	70.3%	9.5%	5.4%	14.9%
22-24	46.2%	15.4%	19.2%	19.2%
Over 24	64.2%	13.4%	10.4%	11.9%
Grade point average				
Less than 1.5	57.1%	28.6%	0.0%	14.3%
1.5 - 2	63.3%	8.2%	14.3%	14.3%
2 - 2..5	59.3%	22.0%	1.7%	16.9%
2.5 - 3	67.1%	11.0%	9.6%	12.3%
Over 3	56.5%	19.4%	6.5%	17.7%
Government sponsorship				
Sponsored Student	68.5%	16.9%	3.2%	11.3%
Non Sponsored Student	54.8%	14.3%	11.9%	19.0%
Accommodation type				
Internal	71.7%	13.3%	5.0%	10.0%
External	58.4%	16.3%	8.4%	16.8%

Table 2 shows the preferred communication channels among students for academic advising. Approximately 60% of the male students and 62% of the females prefer face-to-face interviews with their academic advisor. In this regard, there is no significant difference between male and female for a face-to-face interview. On the other hand, 13% and 3% of male and female students respectively do prefer phone calls. Results for social media preferences are very close with only 1% difference between both of them.

It could be seen from Table 2 that 79% of Business and accounting students prefer face-to-face interview, whereas only 1% prefer a phone call. In contrast, None of IT students prefer a phone call. The preference for IT students is email communication with 36%, and the social media reaches 9%. At the same time, more than 20% of English students prefer the social media. Law students are like the others in term of preference as well as more than 50% prefer face-to-face but, there was no significant disturbance regarding email, phone call, and social media.

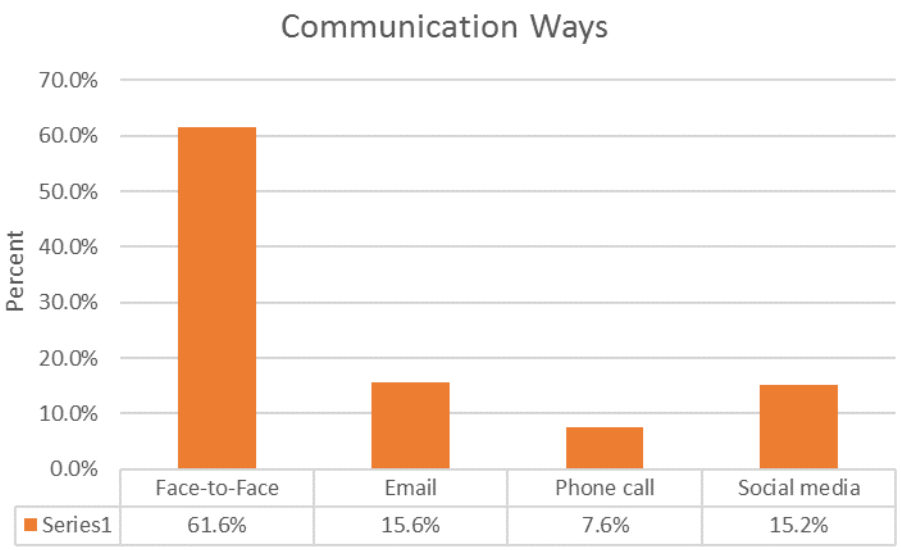

Figure 1: Graph of percentages distribution of preferred communication ways

Figure 1 shows that face-to-face communication is the preferable method between the single and married ones with 63% and 57 % for each followed by social media for married students with 17% whereas emails are in the 2nd position for the single students with 15%. Phone calls, on the other hand, have the lowest rates among single students with only 7%.

As it is represented, the face-to-face communication method is the most preferred one among the intact participants regardless students age, followed by an email with a vast difference. Social media and phone calls have both similar percentages among participants who are between 22 and 24 years old at a rate of 19% for both. However; phone calls have the lowest rates among all the communication method with only 3 % just for the category of 18-20 and 5%for the group of 20-22 years old which can be seen from table 2.

Table 2 also shows that the government-sponsored students show a tendency toward face-to-face communication with 68% followed by emails by 16%, social media 11% and the phone calls with only 3%. Although 54% of the non-sponsored students prefer face-to-face, social media ranked in the 2nd place with 19% followed by emails with 14% and 11% for phone calls. Moreover, face-to-face as a channel of communication remains the preferred method between students with internal accommodation with almost 71% followed by 58% for students living in external housing. Phone calls also have the least percentages of only 5% and 8.4% for internal and external housing respectively. On the other hand, students in outer housing show a tendency toward the use of social media with 16% followed by emails with 16%, whereas dorm accommodation students prefer e-mails with 13% over the use of the social media with only 10%.

Tests of Hypotheses

The goodness-of-fit test was conducted to test whether there were significant differences between percentages of the preferred communication ways. The results are shown below in Table 3(a, b), where the null hypothesis was rejected since the p-value < 0.05. Therefore, there is a significant difference between percentages of the preferred communication ways. Hence, face-to-face is the preferred way for communication between Omani students and their academic advisors because it has the highest percentage compared with others.

Table 3(a, b): Results of goodness-of-fit

(a)

	Observed N	Expected N	Residual
Face-to-Face	154	62.5	91.5
Email	39	62.5	-23.5
Phone call	19	62.5	-43.5
Social media	38	62.5	-24.5
Total	250		

(b)

Chi-Square	182.672[a]
df	3
Asymp. Sig.	**.000**

To test whether there is a significant relationship between the preferring communication ways, and independent demographic and educational variables, Chi-square test was conducted. Table 4 presented the results of Chi-Square test for the relationship between communication way and independent variables. It reveals that there is a relationship between the preferred communication way and gender, specialty, and government sponsorship since the P-values < 0.05. While there is no relationship between preferred communication way and education level, employment status, marital status, age, and grade point average, where the P-values > 0.05. Therefore, the null hypothesis was rejected and accepted the alternative hypothesis that stated that there is a relation between the preferred communication ways and some of demographic and education variables.

Table 4: Show the results of Chi-Square test for the relationship between communication way and independent variables

	Dependent Variable: Communication Ways		
Independent Variables	Value of Chi-Square Tests	df	Asymp. Sig. (2-sided)
Gender	10.131[a]	3	.017
Specialty	40.437	9	.000
Education Level	15.877	9	.069
Employment status	4.103	3	.251
Marital Status	1.581	3	.664
Age	15.482	9	.079
Grade Point Average	13.766	12	.316
Government sponsorship	10.878	3	.012
Accommodation Types	3.665	3	.300

Conclusion

There are some noticeable dramatic changes in the educational delivery systems, student access, and faculty roles aiming to increase student retention and solve the student success problem. One of these changes is the academic advising which has become an important process and prominently features in the modern educational system world over. Indeed, academic advising has gained more focus in contemporary researchers, literature, and policies so far, but it still faces several difficulties such as miss-communication with students.

Models of academic advising have varied from, prescriptive, development, intrusive and integrated. Each one of them tries to address issues related to academic advising. Scholars have indicated that some of the communication challenges that might affect the implementation of the advising programs could be the disorganization of the academic sessions, time allocated for advising, the academic records and the distraction issues.

This study focused on exploring the preferred communication channels among Omani students to contact their advisors. It concluded that face-to-face communication was still the preferred method among Omani students to contact their advisors, followed by email, social media, and phone calls respectively. However, this study also concluded that there was a relationship between the preferred communication method and gender, specialty and sponsorship. However, this study recommended that more efforts should include more data and more work of the scholars and advisors which should be aligned together for exploring the best-preferred communication methods to handle the academic advising issues. Also, it would be manifest to explore which academic advising method is preferable for students.

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PARTICIPATORY APPROACH IN THE DESIGN OF CREATIVE COMMUNITY SPACES IN SURABAYA

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Abstract: Creative communities have the potential in promoting a city's cultural and touristic values. In Surabaya, the lack of properly designed spaces to accommodate their unique activities and promote them to the society have become key obstacles observed. Meanwhile, the profit-driven tendency of interior design practice today has led to the decrease in community and social awareness in design education. This research aims to implement participatory methods in the design of community spaces as studio projects to encourage students and lecturers to gain more social awareness of surrounding communities and utilize their expertise to contribute to the society. Through ethnographic methods of observation, students and lecturers participated in a creative community's activities in order to grasp their aspirations empathetically. The community was also invited to participate in the design process of defining problems, setting design goals, ideating concepts and testing design prototypes. Findings reveal that through participatory design, the designs of community spaces yielded can accommodate creative activities in a novel way and assist in promoting their potentials to the society, contributing to the vision of Surabaya as a creative city. Students and lecturers also gain a reflexive introspection of their significant role in the society as agents of social change.

Keywords: participatory design, human centered design; Surabaya; community space

Introduction

Surabaya is the second largest city in Indonesia, historically known as the "City of Heroes" since many famous battles and martyrs died in this city during the nation's fight for independence. Consequently, Surabaya is well-known for the brave, strong, blunt, highly sociable and straight-forward character of the people, popularly called "arek Suroboyo" in local Javanese slang (Sriyanto and Fauzie, 2017). Such bold and dominating characters are evident in the development of creative communities in Surabaya today. These increasingly active groups of people share interests and passion in various forms of arts, related to local history as well as traditional and contemporary Surabaya culture that are truly unique and have the potential to motivate the general society to become more creative and productive in life. Hence, they are agents of collective creativity and catalysts for the future development of the city. As stated by the head of The Regional Representative Council of Surabaya, communities have the potential to promote Surabaya's local culture and touristic value (Wijayanto, 2017). However, despite the presence of such valuable communities in Surabaya, they lack properly designed spaces that can truly accommodate the communities' various activities. Conventional rented spaces, living rooms of private residential spaces or garages are often used for their activities, with unappealing storage spaces for their art works or collections. They also lack the means that can help in promoting their community's potentials to the public in terms of space and place, causing them to rely heavily on social media.

While these social issues are relevant and could be addressed by architectural and interior designers, the profit-driven tendency of design practice today has led to the decrease in community and social awareness in design education (Kroeker and Singh, 2007). Most of interior design projects, whether in education or professional practice, are commercially-bounded, with forces generated by elite brands, marketing trends or popular styles rather than touching on the social aspects of design. On the basis of this background, this research aims to

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implement participatory methods in the design of community spaces as studio projects to encourage both students and lecturers, as present and future designers, to gain more social awareness of surrounding communities and utilize their expertise to contribute to the society. Through ethnographic methods of observation, students and lecturers participated in a creative community's activities in order to grasp their needs and aspirations empathetically. The community was also invited to participate and involve themselves in the following design process of defining problems, setting design goals, ideating concepts and producing prototypes and performing usability tests. Through this research, it is hoped that the idea and method of implementing mutual designer-community participatory methods in design education as performed in this research may serve as a learning model in improving future interior design learning curriculum that is aimed at building social responsibility and community awareness instead of competing against profit-driven trends in the society.

The Proposed Participatory Learning and Design Process Model

The learning and design method proposed and used in this research was developed from the approach of participatory design, a human-centered design approach that attempts to involve end-users, experts, community or other individuals in the design process to ensure its usability (Bijl-Brouwer and Dorst, 2017). However, the aim of this method was not only incorporated for such means but also to encourage social interactions in the design process that would in turn ignite the designers' awareness of their community and sense of social responsibility. The employment of participatory learning also facilitates collaborative learning processes and a sense of connectedness between students themselves and with their lecturers, boarding the same boat of educational adventure, fostering a positive academic community (Summers, 2010). At the initial stage, a group of ten students, supervised by one lecturer, were introduced to an existing creative community that would be the object of their studio design project. The design and learning process they must undergo followed the design thinking process adapted from Stanford School of Design (Carroll et. al, 2010), which must be conducted through six stages (figure 1). Based on human-centered design studies, the authors as studio instructors incorporated mutual participatory methods in all the stages of the design and learning process.

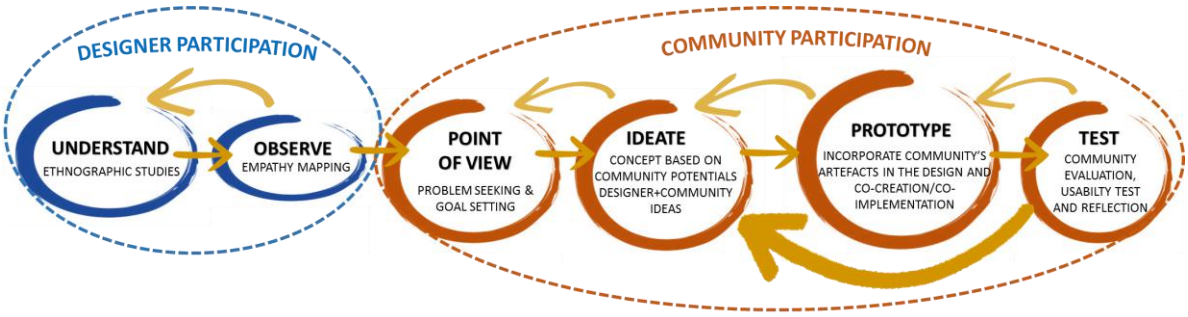

Figure 1: Mutual participatory learning and design process of creative community spaces to encourage collective creativity, social interaction, awareness and responsibility (adapted from Caroll et. al, 2010)

The design process started with the Understand stage, in which students and mentors participated in the creative community's activities using the ethnographic approach, an approach in which the designers involve themselves in the daily lives and activities of a certain community at a their natural setting and for a significant duration of time, in order to gain a deep understanding of the subjects of their research (Balsiger and Lambelet, 2014). The second stage was the Observe stage, in which the designers began to observe their subjects and empathized with both their passions and problems (their gains and pains) through empathy mapping (Ferreira et. al, 2015). The empathy maps helped in determining positive values (gains) of community that ought to be sustained and promoted through the design interventions, while also identifying the problems (pains) that needed to be solved in terms of spatial design. From the Point of View stage, the designers involved the community to participate throughout the design process until its implementation. Both designers and community members determined design needs and set design goals together through affinity diagrams, goal maps and open discussions. Entering

the Ideation stage, the designers involved the community's ideas to formulate concepts that were based on the community's potentials or values, rather than following popular design concepts or trends in the market. Similarly, in the prototype stage, the designers incorporated all these potentials in terms of skill, art works and atmosphere in the design their spatial elements. There were two types of prototypes that must be produced. First is a conceptual scaled prototype of a 300-500m^2 of interior space based on a real site that was deemed suitable as the community's basecamp. The scaled prototypes were in the form of presentation drawings and a 1:50 scaled mock-up. These prototypes would serve as a useful tool for future basecamp set-ups and design proposals that collaborate with the regional government. The second prototype was the styling or setting of space or spot located in the community's existing basecamp. This prototype should have a direct usability that could assist in accommodating or promoting the community's current activities. The community was encouraged to assist in the design through co-creation and co-implementation to give them a sense of contribution and ownership in the design (Prahalad and Ramaswamy, 2004). In the Test stage, the community was invited to evaluate the first conceptual prototypes produced by various methods such as dot voting and both verbal and written feedbacks. Designers then returned to the ideation and prototype stage again until a final community approved design was yielded. Meanwhile, a summative user test was conducted on the second prototype to ensure its usability to community (Rubin and Chisnell, 2008). Through this active mutual interaction and participatory process, the studio instructors' goal was to increase both the students' and the lecturers' social skills, ignite their social awareness and responsibility according to their interior design expertise.

Results and Discussion

The community that has been taken as the case study in this paper is a historical military reenactment community who calls themselves "De Mardijkers," referring to a community in colonial Indonesian cities during the Portuguese-Dutch rule that were made up of the descendants of freed slaves (Choudhury, 2014). Their main activities included performing military reenactments in public spaces, collecting both original and replicas of military equipment such as uniforms, weapons, personal belongings and documents. From the Understand to the Observe stage of design, the students and lecturers participated in the community's activities within a period of five weeks. Many activities were performed together ranging from direct participation in military reenactments, wearing military attire, using military belongings and attributes, conversing and making friends with the national history-adorned community (Figure 2).

Figure 2: Designers build relations with the community by observing and participating in their gatherings and military reenactment activities using the ethnographic approaches

Through their direct involvement in the community, the designers shared their valuable aspirations, passions and hobbies in an in-depth personal experience that could never have been grasped wholly in the conventional

project-brief model of learning performed prior to this research project, in which students often remain unconnected from their target clients. The De Mardijker community's aspiration was to preserve the memories of past national heroes and important military events that led to the Indonesian independence. The community members are extremely bold, blunt and creative people, who are passionate about preserving local identity and culture. Their specific passion on national history and pride are truly instrumental in promoting the touristic and cultural values of Surabaya, the creative city of national heroes.

In the Observe to the Point of View stage, the process of empathy mapping was a significant part of the process in determining both the community's potentials that ought be promoted or encouraged, and their needs that ought to be accommodated through their design interventions (Figure 3). The maps permitted the transformation of abstract qualitative data acquired from the ethnographic studies into more concrete and, in some cases, quantitative ones, a process needed before the programming of facilities in interior design. In previous project-brief model of learning, designers often proceed to the stage of programming before concretely understanding the problems (pains) of the user. Through this process, it was discovered that the community's problems were the lack of means to demonstrate their knowledge on historical events and military memories that could enrich local history and heritage. Their collections were mainly kept in personal spaces that were poorly displayed and categorized despite their potentials in educating the society.

The process of setting up goals with the community through affinity diagrams and open discussions also permitted collective ideas of problem solving from the community rather than solely relying on the students and lecturers as the sole experts, as often the case in previous models of interior design learning. For example, in the case of this community, the main problem to be solved was how design interventions could help sort out their historical artifacts, from military documents to equipment such the communication and appreciation of national history could be addressed in a structured way. The designers and community decided to design a community centre, with educational facilities that could assist in accommodating the community's reenactment activities. Their designs also needed to provide visitors with historical knowledge, evoking emotions through spatial experiences in order to revive their civic and national pride, in memory of the battles and hardships endured by past national heroes, the incidents Surabaya city is known for till today.

Figure 3: Designers determine community needs and set goals together with the community through empathy maps, affinity diagrams and open discussions

The community's participation in goal setting provided novel insights in the following stage of Ideation. From the problems defined through participatory methods in the Point of View stage, students and lectures realized that innovative design concepts are those that must be based on the community's values and potentials, rather than follow popular design trends in the market. This provided a pathway to innovative designs in which the designers created their own styles based on the usesr rather than follow market-driven forces drawn from popular interior design catalogs and magazines. In the case of this project, the designers formulated a design concept themed as "War in Living Memory," for a conceptual proposal of the De Mardijkers community center. This concept attempted not only to communicate historical facts that led to the nation's independence but also to

evoke the emotions that still sustains in the lives of people today As a result, the conceptual sketches of interior spaces produced displayed military attributes that were fused with interior elements such as walls, floors and ceilings, creating a new style of artwork in interior design (figure 4). Many interior elements were created to evoke the memories of past battles, the hardships and loneliness, that led to the nation's independence such as interior furnishing with patterns from military clothing, unfinished exposed concrete walls that resembled gloomy military camps, foldable fabric furniture in past military offices, rustic surfaces of colonial styled columns and temporary wooden stages that soldiers used to entertain themselves during the war.

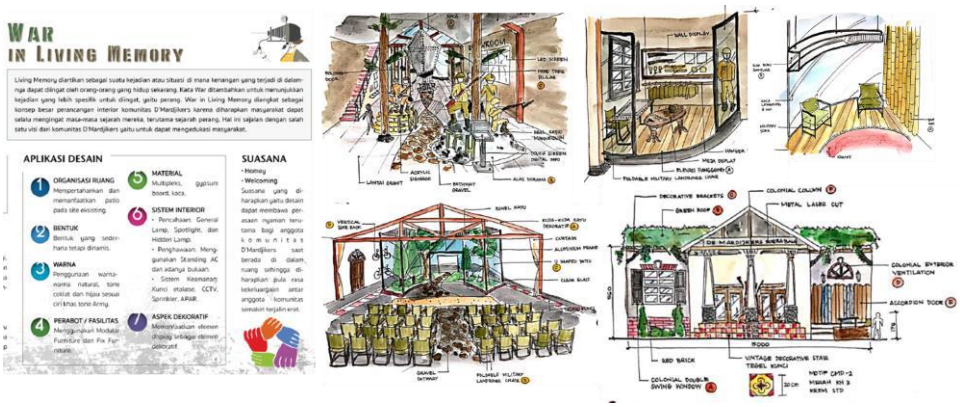

Figure 4: Designers ideate concepts that are based on community's values, passion and potentials and produce conceptual drawings that reflect the memories and emotions of war that led to the nation's independence (diagram by Angela Lisa, conceptual sketches by Anette Firmawan)

The conceptual sketches were further redeveloped into specific spatial programs through realistic interior renderings. From the concept based on community potentials and values, many types of innovative spaces were produced that could be used to educate visitors regarding the historical values, aspired by the community. There were multifunction spaces that could be used for theatrical reenactments for the community and a range of education facilities such as galleries, showcases and replicas of military camps that could help in promoting the historical, cultural and touristic values of Surabaya (figure 5). The galleries were also designed in such a way that they formed a route from entry to exit based on chronological historical events and battles that could evoke the emotions and memories of the past through the reflexive journey inside the building. This conceptual design of a community center could serve as a useful document for future set ups and collaborations with the regional government of Surabaya.

Figure 5: Conceptual interior design of a De Mardijkers community center displaying education facilities such as galleries, showcases and replicas of military camps that could help in promoting the historical, cultural and touristic values of Surabaya (Design by Anette Firmawan and Rudy Putra)

The designs were then displayed on posters and presented to design peers, lecturers and community members (figure 6). This participatory evaluation proved to be truly useful for acquiring feedbacks in order to refine the designs such that they could be truly useful to the community as well as the general public who wish to learn about valuable national history.

Figure 6: Participatory evaluation of conceptual design prototypes of De Mardijkers Surabaya community center by peers, lecturers and community in order to ensure their usability to the community and the society.

Following the production of the first prototype, the project was then followed by the implementation of a second prototype: the interior styling and setting of the community's present basecamp. The community desired a corner to display a part of their collections of military tools and replicas such that they could serve a background for promotion to visitors of the basecamp as well as in social media. The students and lecturers decided to use recycled materials for displaying the items such as bottle wooden containers as used in the past and pallet wood. These materials were economic, yet artistic at the same time, and they support the atmosphere and image of military camps. The community was not only invited to provide feedbacks but also to collaboratively set up the corner together. This process proved to be a truly a collaborative process of team work between the designers and the community and informal social interactions were further developed through the process.

Figure 7: Collaborative set-up and co-implementation process of interior styling followed by summative usability test in the community's current base camp, producing a display corner for a part of the community's personal collections

The collaborative design implementation process resulted in an attractive display corner, despite the lack of space in the community basecamp (figure 8). The display furniture from recycled wood with simple hooks for guns and racks for other military equipment, accompanied with an old bicycle used in past battles, a colonial chair and a manikin dressed in a national army suit, produced an artistic, rustic atmosphere of the olden days, enhancing the image of the community and their aspirations in reviving the heroic memories of the past. Results of summative usability test reveal that this co-created corner has become a useful and creative space that has been instrumental in promoting the community to the general public. The co-designed space has been used as background for photographs in the community's social media and functioned as a mini museum in which visitors can also come and appreciate their collections.

Figure 8: Participatory interior design and styling of the community's display corner, functioning as an identity area in the community's base camp.

From the reflection essays of students and lecturers, they have revealed how the intense interaction with the community has helped them in realizing how important they could be to the society as interior designers. They also revealed their difficulties in trying to understand the unique people and adjusting to their straight-forward and blunt characters. They had to push aside their prejudices and grasp the positive values aspired by the community: their wishes in reviving the memories of national heroes and heroic events that led to the nation's independence. Hence, the participatory method of learning have proved to be successful in providing a

introspective impact on the part of the designers, on how to become humble citizens in order to understand their surrounding communities, contribute their skills for the welfare of others and take part in promoting the region and nation they live in. On the other hand, reflection essays from the community also revealed their gratitude for the assistance they have received from the students and lecturers. Their involvement in the design process made them feel respected by the students and lecturers. This would in turn elevate the profession of interior designers in the eyes of communities and diminish the prejudice that interior designers are often marketable only to the upper class society.

Conclusion

Participatory design provides experiential knowledge, yielding many benefits throughout the whole design process (Kanga et. al, 2014). The participation of designers in the initial stage of understand and observing the community helped them to build the same passion in reviving the historical and cultural value of Surabaya and taught them how to understand and respect their surrounding community. Meanwhile, the participation of the community in the following design process, from setting up goals together, ideating prototypes and collaborating with designers in the implementation of the design ensured the usability of the design to the community and the society. Most importantly, the mutual participation in the whole design process triggered social interactions, a sense of connectedness and experiential learning between the designers (students and lecturers) and the community, hence strengthening the community as citizens and elevating their perception of each other as agents of social change. With participatory design, interior designers in both the academic and professional world can produce innovative designs based on their local community and their own unique potentials rather than compete against repetitive catalogue-based styles and market-driven design trends in the contemporary society.

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DESIGNING AN INTERNSHIP PROGRAM OF AUTHENTIC ENTREPRENEURIAL LEARNING EXPERIENCE FOR STUDENTS IN ENTREPRENEURSHIP CLASS

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Abstract: Universities should foster entrepreneurship that requires integration of theory to real-life learning. Internship programs have become popular method active learning which is useful for students to expand their business competencies. This research addresses a unique situation in which a program was created to exclusively assign students to work with entrepreneurs. Using observational diaries as the instrument of a case research methodology, this research tries to measure the effectiveness of an entrepreneurship internship program in providing authentic learning experiences for students of an entrepreneurship class. Authentic learning combined with entrepreneurial internship focuses on serving the learning gaps related to theory of entrepreneurship and its practice. Results indicate that an entrepreneurship internship program successfully expands students' experience of entrepreneurship and increases their intentions to be entrepreneurs. In conclusion, teaching entrepreneurship in university should be tailored to meet real-life practices and should be incorporate the use of flexible entrepreneurial methods, such as coaching and mentoring.

Keywords: internship; internship program; entrepreneurship; authentic learning

Introduction

The number of entrepreneurs in Indonesia has increased dramatically in recent years. In 2013 to 2014 the percentage of entrepreneurs in Indonesia reached only 1.67%. However, the data from Central Bureau of Statistics (BPS,2017) in 2017 showed that entrepreneurs reach 3.10% of the total population of 225 million. McClelland's theory (1961) states that to become a developed country, requires 2% entrepreneurs of the total population of a country. Thus, Indonesia still has opportunity to become a developed country because at this time the number of entrepreneurs is more than 2%.

Nevertheless, this 3.10% still lags behind Malaysia with 5% entrepreneurs, China 10%, Singapore 7%, Japan 11% and US 12% (Puspayoga, 2017). To be able to compete with these countries, Indonesia has to increase the number of entrepreneurs in all parts of the country.

One way to increase the number of entrepreneurs is through education, especially entrepreneurship education. Some research findings suggest that entrepreneurship education is effective in increasing the number of entrepreneurs. Nasr & Boujelbene (2014) suggest that programs taught by entrepreneurs have a positive influence on entrepreneurial interest and entrepreneurial profile of participants. Din, Anuar, and Usman (2015) found that to increase the effectiveness of entrepreneurship programs required improvement, risk management, locus of control, and self-achievement. This research provides enlightenment to the practice of education at state universities in Malaysia. Entrepreneurship training programs created by the Ministry of Regional Development and Local Government of Malaysia also produce a high average entrepreneurship rate, except for the integrated indicators and low coordination (Ahmad, 2012).

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In fact, although the course of Entrepreneurship has been set to as a compulsory course in universities throughout Indonesia, the effectiveness of this course in creating new entrepreneurs is not optimal. Based on the observation result, most of the students who attended an Entrepreneurship course at State University of Semarang (UNNES) still have low category in some entrepreneurship characteristics formulated by Gasse (2000): entrepreneurial attitude, entrepreneurial project approach, entrepreneurial ability, communication and relationship skills, and good reputation. When several sample participants were interviewed, they revealed that an Entrepreneurship course did not arouse the students' entrepreneur interest. Most lecturers only provide one-way motivation. Some lecturers assign students to make and sell products, but the effect has not been felt by students—the assignments only act as tasks.

Based on these problems, it is necessary to design the teaching of an entrepreneurship course to improve the effectiveness of teaching strategies in higher education. This research will focus on how to design Entrepreneurship lectures so as to provide an authentic learning experiences for students. A learning strategy that will be studied is by applying an entrepreneurial internship program. The purpose of this study is to measure the effectiveness of entrepreneurial internship programs in providing authentic learning experiences so that students experience the process to become entrepreneurs.

Literature Review

Internship Program

Internship is a kind of experimental learning where students take the opportunity to apply learned theories from schools in the real world situation, and it provides an opportunity for students to integrate and consolidate thinking and action (Davies, 1990). An Ideal Internship Programs increases many aspects in work performance. Harun et al (2018) stated that the internship program proves to affect the cognitive and psychomotor aspects of students. It enhances students' knowledge, confidence levels, and psychomotor performances that make them have confidence when conducting practice assessments after they finish the program. This is a positive indication at the beginning of the student's work life before coming into real-life work situations.

Furthermore, the graduates of Griffith University in Crebert, et al (2004)'s study recognize the contributions of the university in providing them the program for skill development. They greatly appreciate the internship programs which are very useful for their present work. The importance of teamwork, delegation of responsibilities, and collaborative learning emerged as the most important factor for effective learning.

However, having good impacts to students, internship program can also give negative impacts. There may occur conflicts among students, universities, and industry or institution. Davies (1990) critically pointed out that the three parties view benefits differently, and have different needs, expectations and beliefs. The differences may lead to a concern about 'quality' of a successful internship program that will attract student's choices of future careers. It is still commonly found today that a bad experience in an internship program will actually make students traumatized and tend to avoid the same industry in the future (Fox, 2011). Therefore it takes a good program design so that despite experiencing problems during the internship, students will not experience trauma that exceeds their skill development in the field.

Authentic Entrepreneurial Learning Experience

Authentic learning typically focuses on real-world, complex problems and their solutions, using role-playing exercises, problem-based activities, case studies, and participation in virtual communities of practice (Lombardi 2007). The learning environments are inherently multidisciplinary. They are "not constructed in order to teach geometry or to teach philosophy. A learning environment is similar to some 'real world' application or

discipline: managing a city, building a house, flying an airplane, setting a budget, solving a crime, for example (Downes, 2007)."

Reeves, T. C., Herrington, J., & Oliver, R. (2002) stated that learning researchers have distilled the essence of the authentic learning experience down to 10 design elements, providing educators with a useful checklist that can be adapted to any subject matter domain.

1. *Real-world relevance*: Authentic activities match the real-world tasks of professionals in practice as nearly as possible. Learning rises to the level of authenticity when it asks students to work actively with abstract concepts, facts, and formulae inside a realistic—and highly social—context mimicking "the ordinary practices of the [disciplinary] culture."
2. *Ill-defined problem*: Challenges cannot be solved easily by the application of an existing algorithm; instead, authentic activities are relatively undefined and open to multiple interpretations, requiring students to identify for themselves the tasks and subtasks needed to complete the major task.
3. *Sustained investigation*: Problems cannot be solved in a matter of minutes or even hours. Instead, authentic activities comprise complex tasks to be investigated by students over a sustained period of time, requiring significant investment of time and intellectual resources.
4. *Multiple sources and perspectives*: Learners are not given a list of resources. Authentic activities provide the opportunity for students to examine the task from a variety of theoretical and practical perspectives, to use a variety of resources, and to require students to distinguish relevance from irrelevant information in the process.
5. *Collaboration*: Success is not achievable by an individual learner working alone. Authentic activities make collaboration integral to the task, both within the course and in the real world.
6. *Reflection (metacognition)*: Authentic activities enable learners to make choices and reflect on their learning, both individually and as a team or community.
7. *Interdisciplinary perspective*: Relevance is not confined to a single domain or subject matter specialization. Instead, authentic activities have consequences that extend beyond a particular discipline, encouraging students to adopt diverse roles and think in interdisciplinary terms.
8. *Integrated assessment*: Assessment is not merely summative in authentic activities but is woven seamlessly into the major task in a manner that reflects real-world evaluation processes.
9. *Polished products*: Conclusions are not merely exercises or sub steps in preparation for something else. Authentic activities culminate in the creation of a whole product, valuable in its own right.
10. *Multiple interpretations and outcomes*: Rather than yielding a single correct answer obtained by the application of rules and procedures, authentic activities allow for diverse interpretations and competing solutions.

Theoretical Framework: Teaching Design of Internship Program for Authentic Entrepreneurial Learning Experience

Based on the previous discussion, internship program can have a positive impact on students who have an entrepreneurship interest, but in some cases it can also cause trauma which make students lose interest to become entrepreneurs. Therefore, it is necessary to design an internship program that is able to minimize unwanted risks during the internship. To design a program that suits the needs of the university, it is necessary to internalize the concept of authentic learning. Implementation of authentic learning is important to provide a

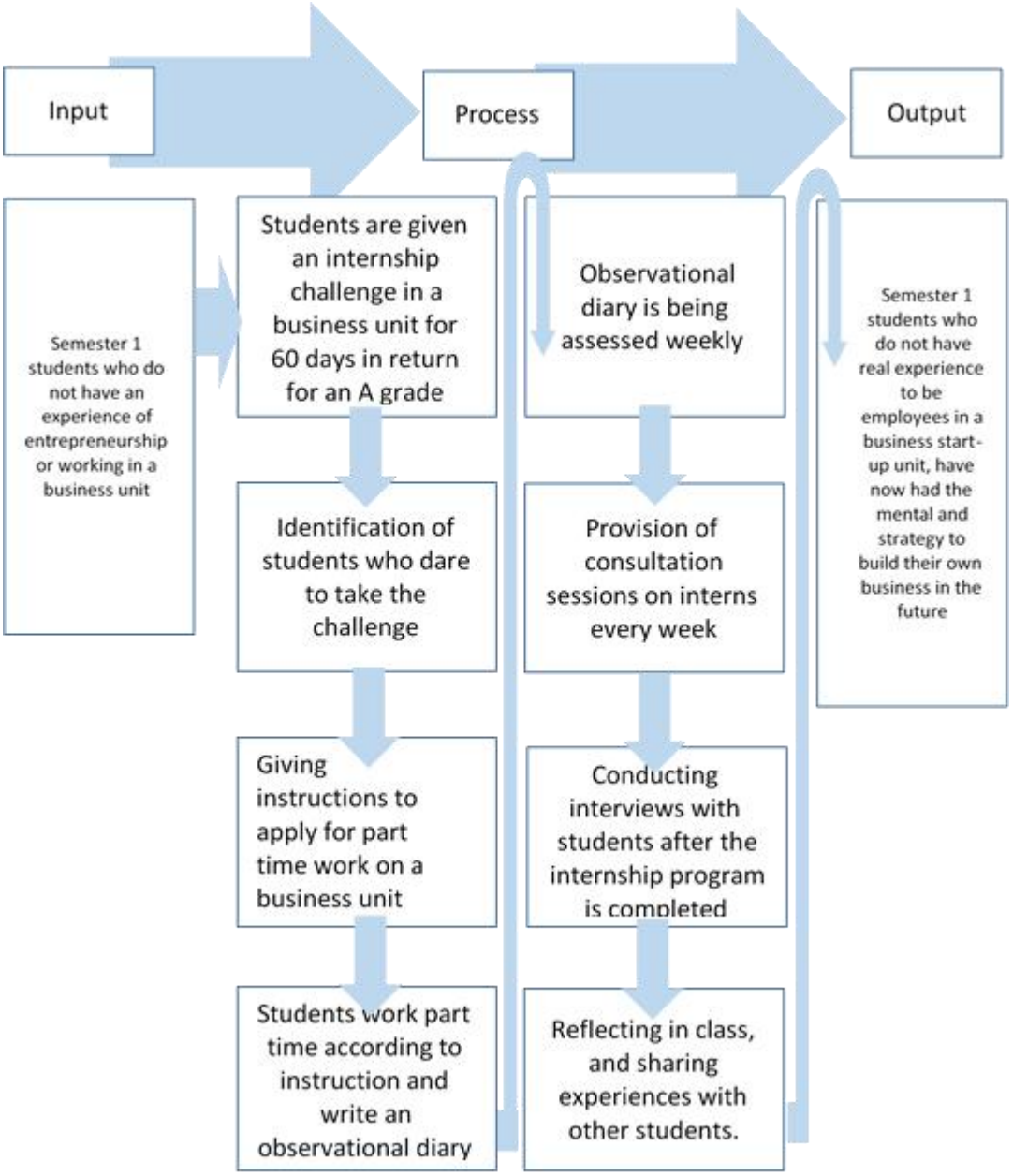
real entrepreneurial experience for students. That is, students not only learn the theory of entrepreneurship in the classroom, but also plunge directly in the real entrepreneurial environment.

Implementation of internship program in accordance with authentic learning so as to achieve a program concept for authentic entrepreneurial learning experience can be explained as follows:

1. *Internship Program has to be real-world relevant*: Authentic activities match the real-world tasks of professionals in practice as nearly as possible. The aim of this program is to equip students with entrepreneurial experiences. Prior to running their own business, students need to first observe the activities of actual entrepreneurs. The internship program should be done in small business units where entrepreneurs is still in start-up category. Thus, students can observe and experience the entrepreneurial condition of a start-up industry.
2. *Ill-defined problem*: Students are required to identify for the tasks and subtasks needed to complete the major task. Students must find their own place of internship in accordance with the criteria set by the lecturer. This is done to train students to think critically and able to define their own place of internship that suits their learning needs.
3. *Sustained investigation*: Authentic activities comprise complex tasks to be investigated by students over a sustained period of time, requiring significant investment of time and intellectual resources. Internship programs must be done by students in at least 60 days. This time span is considered reasonable and able to measure students' endurance both physically and mentally. During these 60 days they have to fill out an observational diary to record all the information obtained at the internship.
4. *Multiple sources and perspectives*: Authentic activities provide the opportunity for students to examine the task from a variety of theoretical and practical perspectives, to use a variety of resources, and require students to distinguish relevant from irrelevant information in the process. In the internship program with the concept of authentic learning, students are required to observe situations that occur in the workplace. This requires them to get the widest possible information from various sources so that they can analyze a situation comprehensively and from different points of view.
5. *Collaboration*: Authentic activities make collaboration integral to the task, both within the course and in the real world. Students are required to work together, not only with their partners, but also with business owners as well as their customers. Students must have excellent interpersonal communication skills to build relationships with people around their premises.
6. *Reflection (metacognition)*: Authentic activities enable learners to make choices and reflect on their learning, both individually and as a team or community. Through observational diary, students write down what they experience during the internship program. This is important as a reflection of what has been done and what is the benefit. It can also be used to formulate answers to questions of how to deal with the same problems in the future.
7. *Interdisciplinary perspective*: Authentic activities have consequences that extend beyond a particular discipline, encouraging students to adopt diverse roles and thinking in interdisciplinary terms. Interdisciplinary perspective in the internship program is possible to achieve. Students must be able to possess the required skills according to the characteristics of their place of internship. Students who apprentice in a restaurant must be able to cook, and those who apprentice in coffee and bindery, of course, must be able to do the technical tasks.

8. *Integrated assessment*: Assessment is not merely summative in authentic activities but is woven seamlessly into the major task in a manner that reflects real-world evaluation processes. Assessment in the internship program is done in an integrated manner. The lecturer will assess the theoretical abilities of written tests and practical skills by analyzing the content of the observational diary and conducting interviews.
9. *Polished products*: Authentic activities culminate in the creation of a whole product, valuable in its own right. The brand of new product here is a new insight and persistency from students who have finished their internship program. By following this program, students are expected to have a new perspective on what entrepreneurship is, what it takes to become an entrepreneur, and how to stay in business.
10. *Multiple interpretations and outcomes*: Authentic activities allow for diverse interpretations and competing solutions. There is no wrong and correct opinion in defining entrepreneurship, how to start, and what strategy to use. All students can define it according to the opinions and knowledge they have gained from the internship program. The output of this program is a prospective entrepreneur who has experienced working in an entrepreneurial place and had a view of how they will build their business.

Picture 1. The design of internship program for authentic entrepreneurial learning experience



Research Methodology

This research is a qualitative approach. Data collection was done by observation of class, interview, and observational diary analysis. Measurement of data validity is done by triangulation method. The data are then analyzed with interactive analysis according to Miles and Huberman's model that consists of data collection, data reduction, data presentation, and conclusion (Miles and Huberman in Sutopo, 2002).

The research stages can be described as follows:

1. Lecturers provide challenges in the classroom for students who dare to do an internship in a place of business around the campus.
2. Lecturers give instructions to write an observational diary to detail all the activities undertaken during the internship, what events are encountered, and how they feel during the internship program.

3. Students undertake the internship program for two months.
4. Lecturers conduct periodic observational diary examination (weekly).
5. After the internship program is completed, the researcher interviews the students who follow the program and analyze the observational diary (using indicator from BEST Report of the European Commission 2012).
6. The researcher does data codification and data reduction.
7. The researcher presents data in a matrix form.
8. The researcher concludes the results of the study.

Results and Discussion

At the beginning of this research report, there has been presented the amount of students who put an interest in the field of entrepreneurship by providing an open challenge for students to follow an internship program. Of the total 110 students coming from two different classes, namely the study program of economic education and the study program of administrative education, only 11 students were to follow the program. The eleven students consist of 10 students of economic education and 1 student of administrative education. That is, only 9% of students who have the courage to actually work in a business unit. The eleven students will receive a higher appreciation for their courage at the end of the semester. Each student has set their apprenticeship, consisting of sewing machine shop, photocopy, event organizer, shoe shop, outdoor equipment rental, pre-school, car rental, food stalls, snack seller, car salon and outdoor equipment store. In this project, the entrepreneurship program is measured by four indicators, namely: entrepreneurship competence, intention towards entrepreneurship, individual's employability, and society as well as economy.

The data triangulation results from the analysis of observational diaries, observations, and interviews can be observed in Table 1.

Table 1. Matrix of Students' Perception of Authentic Entrepreneurial Learning Experience's Impact to Them

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Indicators / Students	**Entrepreneurship Competence**	**Intention Towards Entrepreneurship**	**Individual's Employability**	**Society and Economy**
Name: Lu'Lu'il Internship Place: Small Restaurant	Intention to get more experience in entrepreneurship, persistence, and hardworker.	She wants to run her own business to train her independency and know her potency in a particular business	Eligible. She did all the tasks in the internship place in a appropriate way, she also could handle all tasks when her partners were absent.	She starts to get interest in studying how to be a tailor because everyday she serves many tailors in the store
Name: Mutiara Internship Place: Tailor	Intention to learn something new (pressing paper), to be careful, and have a sense of belonging for the	She wants to be an entrepreneur instead of being a teacher	Eligible. She learns how to do pressing paper in an effective way	She found it difficult to manage the time for working and studying at the same time then she learnt more to schedule her

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Matrix of Students' Perception of Authentic Entrepreneurial Learning Experience's Impact to Them

Indicators / **Students**	**Entrepreneurship Competence**	**Intention Towards Entrepreneurship**	**Individual's Employability**	**Society and Economy**
Store	business			activities
Name: Iva Internship Place: Copy Center	Intention to get more experience in entrepreneurship, persistent, and hardworker.	She loves doing business and she enjoys the internship program, moreover she also got a big salary for her job	Eligible. She has a good managerial skills and negotiation skills because her place in doing internship has trained her very well	She got many job opportunity references from her seniors, meaning that she has a good communication skills
Name: Nisa Internship Place: Event Organizer	Confident, responsible, Good communication skills, friendly, and patient	She wants to provide job opportunities to other people and she has a dream to build an MLM business	Eligible. She has good managerial and promotional skills in selling shoes	She could do negotiation with the shoe store owner for the time schedule and she was able to sell some couples of shoes, then she has a good skills in communicate
Nama: Selvy Internship Place: Shoes Store	Responsible, persistent, and loyal	She has a big dream to empower people around her place at her village to make them more productive by developing a business	Eligible. She has skills and capability in engaging well with her partners in internship place	She had a good engagement with her partners in her job, meaning that she is friendly and an easy going person
Nama: Aditya Internship Place: Rental Outdoor	Patient, good communication skills, and persistent	She are really motivated to be an entrepreneur after she got salary in her job	Eligible. Even she seems do not comfort with children for the first time but she tried to manage her emotion well	She learnt to get deal with children, the principal, teachers, and people around the pre-school
Nama: Rani Internship Place: Pre-School	Intention to get more experience in entrepreneurship, she loves learning something new	She wants to be a teacher but she also wants to have a side job to be an entrepreneur.	Eligible. She has a good managerial skills in rescheduling her activities while doing internship	She learnt how to handle customers

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Indicators / **Students**	**Entrepreneurship Competence**	**Intention Towards Entrepreneurship**	**Individual's Employability**	**Society and Economy**
Nama: Yutika Internship Place: Car Rental	Discipline, loves to learn something new, patient, responsible	She wants to provide job opportunity to other people around her	Eligible. She has high intention to learn something, here she learnt how to wrap the meals, arranging beverages, etc	She learnt how to handle customers and her boss
Nama: Alhazmi Internship Place: Snack Reseller	Persistent and patient	He wants to arrange his own business so that he can decide his own rules in doing business	Eligible. Even sometimes he got loss but he tried to learn from his error	He had a good engagement with his friends
Name: Tito Internship Place: Car Wash	Confident and hard worker	He thinks competition to get a job will be more difficult in the future so he wants to create his own business	Eligible. He has many experiences in working (around 2 years)	He coukd handle customer complaint in a very appropriate way
Name: Choerul Internship place: Outdoor Shop	She has a high spirit to work and she is a hard worker	She wants to create job opportunity to other people	Eligible. She had proven that she could manage her time well in doing internship and studying in campuss	She had a good engagement with his friends

Based on Table 1, it can be concluded that almost all participants of the internship agree that the program is able to increase personal competence related to the characteristics of an entrepreneur. One of the entrepreneurial competencies trained in the program is discipline. During the program, participants are required to discipline in managing the time so that it can work well without neglecting their duties as a student. Lu'lu'il who performed an internship program at a food stall near the campus wrote in his observational diary:

> "... and I do not want to late, so I did not take a shower before going to work. My job is only cooking so it makes me sweat. Therefore it's important to wear make-up ..."

Aditya who worked part-time at an outdoor equipment rental also put forward the same thing. He wrote in his observational diary the following:

> "... when I arrived at work I immediately started washing bags, mattresses, tents, tent cover, nesting, and others."

In addition to discipline, entrepreneurial character that is highly honed in this program is persistency. As written by a student named Iva who worked at a photocopy service as follows:

> "Binding ten papers makes me very tired, because I did it extra carefully therefore it takes a long time. It is not easy to bind quickly, so I carefully set the paper and cover, and I often ask my seniors for help."

Something similar is also experienced by Selvy who apprenticed at a shoe store.

> "This one buyer is practically testing my patience for asking some model where the stock is stored in a very difficult location to reach."

The students' comments are alike with the results of Wendi and Kusumah's (2017) research which states that many of the influences of the factory teaching have a positive and significant effect on the competencies of an entrepreneur. While entrepreneurial competencies according to Osterwalder and Pigneur (2012) are: entrepreneurial factors (the characteristics, attitudes, and behaviors of funders), strategic factors (the effectiveness of firms' strategic decisions and the strategic capabilities of firms) and contextual factors (market dynamics, location-specific advantages).

Furthermore, based on the opinions of participants in this study, it can be concluded that the internship program is able to improve intention towards entrepreneurship. This can be inferred from some statements of participants. One of them is a statement by Nisa who apprenticed at an event organizer. After completing this program, she claimed to be happy and enjoy her work during the program. This can be seen from the writings in the observational diary as follows:

> "I have an entrepreneurial desire because I think I can be passionate and carefree to run it."

Aditya also stated the same thing as quoted from the observational diary as follows:

> "I want to be an entrepreneur because I want to eradicate the poverty line in my village. I aspire teenagers at my age to be able to work together to build small businesses. "

Tito who did the internship at a Car Wash also expressed his desire to become an entrepreneur:

> "If there is a chance, of course I want to be an entrepreneur. I understand if I just rely on diploma, then the competition will be more severe. Even now I start thinking of opening a business. "

These findings are similar to those of Walter and Dohse (2009) which show that entrepreneurship education model that provides work experiences can be used to complement entrepreneurship in different ways.

The next indicator is individual's employability. In line with the results of this study, several previous studies have found the same thing, namely the result internship program as an effective mechanism to improve employability (Shoenfelt, Stone, Kottke, 2012). Lerman (2013) states that the skill-enhancing effects of several youth programs and demonstrations, with an emphasis on how well these efforts raise non-academic skills directly through purposeful activities or indirectly as a result of other employment-enhancing services. The survey results from Gault, Leach, and Duey (2010) indicate significantly more full-time opportunities for undergraduates with internship experience, corroborating earlier published empirical research. Additionally, while even average-performing interns were significantly more likely to receive full-time job offers than non-interns, high-performing interns were more likely to receive higher starting salaries. Finally, the study shows that high intern performance results in enhanced employer-perceived value of the internship program.

The last indicator of Authentic Entrepreneurial Learning Experience is social and economic competence. Internship programs are proven to improve participants' ability in social communication and economic

intelligence. Mutiara, a student working in a tailor store, wrote that this internship program trains her communication skills and stimulates her to learn something new.

> "I talked to the shop owner about the barriers, usually about what I did not know related to sewing tools. Working in this place got me interested as well for wanting to learn sewing. "

On the other hand, Rani, who did the program in a pre-school, wrote that she initially felt frustrated working in the neighborhood, but then she began to adapt after a few days of work.

> "The most uncomfortable work in early childhood is the children who are stubborn and could not be arranged, uugghhh they made me stressed. ... But then on the fourth day of work, I felt very happy, why?? Because I could play with cute children ... Since the eighth day and even until today are the days that I really like. Why? Because they did gymnastics and we were able to go out of the building. "

The findings that the internship program enhances the social and economic capacity of the participants are supported by the results of previous research, namely Kim and Park's (2013) research which implies that desirable social experiences during students 'internship can ultimately lead to a change in students' perceptions. Back and Halim (2006) stated Internal Reports a number of significant learning outcomes of which the most significant were personal and interpersonal skills.

Conclusion

This empirical investigation focuses on designing an internship program of authentic entrepreneurial learning experience for students in entrepreneurship class. The findings of this research regarding entrepreneurial internship are supporting earlier perception-based researches suggesting interns are better prepared to stimulate students to be entrepreneurs. Result indicates that entrepreneur internship program successfully enhanced students' experience of entrepreneurship and increased their intentions to be entrepreneurs. All the indicators: entrepreneurship competence, intention towards entrepreneurship, individual's employability, and society and economy have been confirmed very well. For suggestion, teaching entrepreneurship in university should be tailored to meet real-life practices and use of flexible entrepreneurial methods, such as coaching and mentoring.

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ASSESSMENT OF ICT USAGE AMONG SECONDARY SCHOOL COMPUTER TEACHERS AND STUDENTS IN NSUKKA EDUCATION ZONE OF ENUGU STATE, NIGERIA

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Abstract: The use of Information and Communication Technology (ICT) is very essential in the spread of information. Electronic devices and softwares which aid the spread of information constitute ICT. These devices have impacted positively in education through lesson preparation, instructional delivery, individualized instruction, and collaborative learning. Despite the positive roles of ICT in education, there is paucity of information on its use by secondary school computer teachers and students in Nigeria. The study was thus designed to assess ICT usage among secondary school computer teachers and students in Nsukka Education Zone. The study population consisted of 51 computer teachers and 4242 students while the sample size comprised of 51computer teachers and 520 students. A survey research design was adopted for the study. Data was collected using an instrument titled 'ICT Usage Assessment Questionnaire' validated by three experts in computer education. Data were presented as frequencies and percentages. The results of the study showed that ICT was not used effectively in lesson preparation, instructional delivery, individualized learning and collaborative learning of computer studies in public secondary schools in the Zone. Based on the findings, it was concluded that Nigerian secondary schools are yet to extensively adopt Information and Communication Technology.

Keywords: Computer studies, ICT, Nsukka, Students, Teachers

Introduction

Information and Communication Technology is an umbrella that includes any communication device, or application including radio, television, cellular phones, computer, and network's hardware and software, satellite systems as well as the various associated services and applications notably, video conferencing and distance learning (Offor, 2012). Cited benefits of ICT can be seen in nearly every sector of the economy including e-banking and e-learning (Daniel et al., 2007). Ayogu (2010) also opined that ICT is often spoken of in terms of a particular context like: ICT in home, health care, library and of course education, the main focus of this study.

According to Mba (2007), ICT in education simply means using ICT to teach and learn. ICT has been used to empower the teachers of computer studies and to promote the growth of skills necessary for the 21st century workplace (Ogumadu, 2006). Hence, uses of ICT in education can be summarized into lesson preparation, instructional delivery, individualized learning and collaborative learning (Nwosu, 2013).

The inability of many secondary school graduates to make adequate use of Information and Communication Technology (ICT) devices has become worrisome to the educational system of Nigeria. It is evident that despite the policies on ICT in education; computer studies being made compulsory in West African Examination Council; knowledge of computer being a prerequisite for most jobs and Joint Admissions and Matriculation Board examination being made computer based, there is still a high level of computer illiteracy among secondary school graduates especially those that graduated from public schools.

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Factors responsible for this inadequate use of ICT in Nigerian education sector include lack of adequate ICT facilities and scarcity of qualified computer teachers (Adomi and Kpangban, 2010). Many public secondary schools lack basic ICT facilities such as computer laboratory, computers, projectors, tablets, electricity, stand-by generating set, internet connection and qualified computer teachers. Students are therefore exposed to computer studies theoretically with little or no hands-on training. Stressing these challenges further, Yusuf in his analysis of the 'Nigerian National Policy for Information Technology', noted that this policy was inadequate for positive impact on the Nigerian education system (Yusuf, 2005). This is because the philosophical frame of reference seems to be market driven with little emphasis on the integration of ICT in instruction (Yusuf, 2005). Additionally, Nwidum (2010) also noted that ICT appeared to be more workable in such field as engineering and medicine in Nigeria than in education (Nwidum, 2010). This researcher also emphasized that the use of projector in teaching secondary school students in rural areas is impossible due to lack of a well-articulated education policy and electricity (Nwidum, 2010).

The study therefore focuses on the need to ascertain the usage of ICT among secondary school Computer Studies Teachers and Students using Nsukka Education Zone of Enugu State as a model. The study specifically sought to assess teachers' usage of ICT in lesson preparation for computer studies, teachers' usage of ICT in instructional delivery of computer studies, students' usage of ICT in individualized learning of computer studies and students' usage of ICT in collaborative learning of computer studies.

Research questions

The following research questions were raised to guide the study:

1. What is the computer teachers' level of agreement on ICT usage in lesson preparation for computer studies in secondary schools in Nsukka Education Zone of Enugu State?

2. What is the computer teachers' level of agreement on ICT usage in instructional delivery of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

3. What is the students' level of agreement on ICT usage in individualized learning of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

4. What is the students' level of agreement on ICT usage in collaborative learning of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

Methodology

Descriptive survey research design as described by Ezeah (2011) was adopted for this study. The study population comprised of 4242 Senior Secondary Three (SS3) students and 51 computer teachers obtained from the 64 public secondary schools within Nsukka Education Zone of Enugu State. Stratified and proportionate purposive random sampling methods were used to obtain a sample size of 520 student-respondents and 51 Computer studies teacher-respondents from 34 secondary schools (23 urban and 11 rural schools).

Instrument for data collection was a self-designed structured questionnaire titled 'ICT Usage Assessment Questionnaire (ICTUAQ)' validated by three computer education experts. The Cronbach Alpha was used to determine the reliability of the instrument and the reliability was 0.85. the questionnaire was administered by the researchers with the help of research assistants.

Data analysis: Data collected were analyzed using frequency tables and percentage scores.

Results

The results of the study are presented below.

Research question 1: What is the computer teachers' level of agreement on ICT usage in lesson preparation for computer studies in secondary schools in Nsukka Education Zone of Enugu State?

Data presented in Table 1 shows that items 1, 2, 5 and 7 were used by computer teachers in lesson preparation of computer studies while items 3, 4, 6, 8 and 9 were not used.

Research question 2: What is the computer teachers' level of agreement on ICT usage in instructional delivery of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

Data presented in Table 2 shows that items 1-10 were not used by teachers in instructional delivery of computer studies.

Research question 3: What is the students' level of agreement on ICT usage in individualized learning of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

Data presented in Table 3 shows that items 1-10 were not used by students in individualized learning of computer studies.

Research question 4: What is the students' level of agreement on ICT usage in collaborative learning of computer studies in secondary schools in Nsukka Education Zone of Enugu State?

Data presented in Table 4 shows that none of the items (1-10) were used by students in collaborative learning of computer studies.

Discussion

The results of the assessment of computer teachers' ICT usage in lesson preparation for computer studies revealed that computer teachers' use of ICT in lesson preparation are in sourcing lesson materials with computer or phone and saving these materials in computer storage devices only. These findings are in agreement with the report of Ezema (2010) which stated that many computer teachers in secondary schools only make use of ICT to source lesson materials in preparation for teaching.

The percentage responses of the assessment of computer teachers' use of ICT in instructional delivery of computer studies implied that ICT was not incorporated in instructional delivery of computer studies in secondary schools in Nsukka Education Zone of Enugu State. This finding agrees is in line with the opinion of Adomi and Kpangban (2010) that many secondary schools, especially the public ones lack basic ICT facilities, making it difficult for teachers to use ICT to carry out teaching.

The study also showed that secondary school students in Nsukka Education Zone of Enugu State do not make use of ICT in individualized learning of computer. This could be attributed to the absence of ICT tools necessary to carry out individualized learning (Angib, 2005).

The result of the assessment of students' use of ICT in collaborative learning of computer studies suggests that students do not also make use of ICT in collaborative learning of computer studies in public secondary schools in Nsukka Education Zone of Enugu State. This finding is similar with the report of Kaplan (2008) which stated that despite the fact that ICT promotes a virtual collaboration among students which is focused on addressing a specific area, students do not engage in it to study together.

Conclusion and Recommendations

The results of this study have shown that ICT is not effectively used in lesson preparation, instructional delivery, individualized learning and collaborative learning among secondary school computer studies Teachers and Students in Nsukka Education Zone of Enugu State. Based on the findings, it was concluded that ICT is not used effectively by teachers and students in Nsukka Education Zone of Enugu State.

It is recommended that adequate number of competent computer teacher(s) be employed in each public secondary school in Nsukka Education Zone of Enugu State; urgent ICT training workshop for already recruited computer teachers be carried out and adequate ICT facilities needed for proper use of ICT in teaching and learning be provided.

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Appendix

Table 1: Assessment of Computer Teachers' ICT Usage in Lesson Preparation for Computer Studies

Item Statements As a computer teacher in secondary school, I make use of:	**Frequency of Responses**				**Percentages %**	**Decision**
	SA	**A**	**D**	**SD**		
1. Computer and cell phones in sourcing for lesson materials in preparation for my lessons	30	13	7	0	91.90	A
2. The internet to update my knowledge for preparation of my lesson note	20	10	10	10	78.57	A
3. The internet to discover new knowledge pattern for my lesson preparations	0	8	12	30	30.76	D
4. ICT facilities like computer and presentation software to organize my lesson materials in readiness for teaching	0	0	17	33	00.00	D
5. The internet to gather learning experiences required for teaching	5	15	18	12	57.52	A
6. The internet for Computer Assisted Instructions that will help to enhance my teaching	0	0	31	19	00.00	D
7. Computer storage devices to save documents in readiness for teaching	21	16	9	4	85.71	A
8. Computer programs to develop CAIs to aid my teaching	0	0	35	15	00.00	D
9. PowerPoint computer slides to prepare my lesson before presentation	5	8	27	10	40.74	D

Table 2: Assessment of Computer Teachers' Use of ICT in Instructional Delivery of Computer Studies

Item	Statements As a computer teacher in secondary school, I make use of:	Frequency of Responses				Percentages %	Decision
		SA	A	D	SD		
1.	Multimedia projector to deliver my lessons in the school	0	0	18	32	00.00	D
2.	Computer Assisted Instructions to deliver my lessons in the school	0	3	17	30	12.33	D
3.	The internet to post information to the students of my class	0	0	36	14	00.00	D
4.	Video conferencing to deliver my lessons	0	0	26	24	00.00	D
5.	Online methods like e-Learning to deliver my lessons	0	0	14	36	00.00	D
6.	Tutorial packages on CD ROMs to teach and assess my students	0	5	22	23	18.29	D
7.	The internet to hold virtual classes with students of my class and my colleagues	0	0	13	37	00.00	D
8.	The internet to access bulletin boards available on the web that provide discussion forums for instructional delivery of my lessons	0	8	11	31	31.17	D
9.	Teleconferencing to deliver my lesson	0	0	21	29	00.00	D
10.	Smart board to deliver my lesson	0	0	10	40	00.00	D

Table 3: Assessment of Students' Use of ICT in Individualized Learning of Computer Studies

Item Statements As a student in secondary school, I make use of:	**Frequency of Responses**				**Percentages %**	**Decision**
	SA	**A**	**D**	**SD**		
1. Internet to access options available in the net for web based learning in my school	0	0	350	150	00.00	D
2. The internet to explore different learning options at my own pace	0	0	325	175	00.00	D
3. CAI to learn in my school	0	43	227	230	15.87	D
4. The internet to improve learning focus and self directed learning very well in my school	0	0	378	122	00.00	D
5. The computer laboratory to discover and explore things on my own	0	93	250	157	29.81	D
6. The internet to download beneficial learning materials	0	0	421	79	00.00	D
7. Online learning resources on at least one of the following: desktop computer, laptop computer, cell/mobile phone with mp3 capability	0	86	351	63	25.22	D
8. Electronic digital ICT libraries to read up materials on Computer studies	0	112	298	90	32.88	D
9. Computer storage device(s) to save downloaded materials	0	143	266	91	40.78	D
10. ICT facilities like cell phone and tablets to have a virtual classroom learning at any time and place	0	157	280	63	43.05	D

Table 4: Assessment of Students' Use of ICT in Collaborative Learning of Computer Studies

Item Statements As a student in secondary school, I make use:	**Frequency of Responses**				**Percentages %**	**Decision**
	SA	**A**	**D**	**SD**		
1. The internet to engage in online class discussions / assignments	0	0	407	93	00.00	D
2. ICT facilities to carry out group discussions	0	0	452	48	00.00	D
3. The internet to engage in interactive learning by building relationships with one another	0	183	240	77	49.64	D
4. My schools education software for collaborative learning	0	0	469	31	00.00	D
5. The internet to engage in online discussions and seminars with my colleagues and teacher once weekly	0	0	472	28	00.00	D
6. My schools electronic portal to carry out group debates	0	0	463	37	00.00	D
7. The internet to exchange ideas with my colleagues	0	0	446	54	00.00	D
8. The internet to carry out group research	0	0	431	69	00.00	D
9. USENET to indulge in a group learning	0	0	470	30	00.00	D
10. My cell phone to form and carry out a group discussion with my colleagues	0	87	393	20	24.46	D

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STUDENT'S MEDIA LITERACY SKILL'S IMPROVEMENT USING CHARACTER EDUCATION BASED MEDIA LEARNING MODEL

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Abstract: The purpose of this research is developing media literacy learning model through character education approach. The 21st century learning challenges future teacher to use media in teaching and learning at school with creative and innovative ways. PGSD UMMI (Elementary School Teacher of Education of Universitas Muhammadiyah Sukabumi) students should have the ability of using media to develop values in their teaching competences also. This article aims to investigate how to develop values by using media literacy learning model in the classroom. The Media Learning Model must be done by finding, managing, processing and presenting data from media. This study was R&D design and participants were 30 second grade students from PGSD UMMI Academic year 2017/2018. Data was gathered through observation, questionnaires, and interviews. This research revealed that this learning model made learning more meaningful and improved media communication skills in how to present data visually. Based on this study results, this learning model improved a media literacy skill as well as means for students in making moral action (to express, show, and construct values) by using a media in Universitas Muhammadiyah Sukabumi.

Keywords: Character Education, Learning Model, Media Literacy, and Value

Introduction

In the early part of 20th century, people considered literate if they had completed a certain grade in school or could sign their name or possessed basic skill of reading and writing. Yet, these competency levels will not be adequate in today's complex society (Naverhebrahim, 2011). Nowadays, in this digital era, people in the world connected easily to each other by using digital media. Mass digital media being referenced as a basic source of information (Kadaruman, 2014a). Because of that, media literacy (ML) becoming an important aspect of modern education. Since in today's social reality media cannot be avoided, nor ignored, there is a necessity for media education as an indispensable area of institutional education on all levels (Ivanovic, 2014). ML interventions, which aim to enhance participants' ability to access, analyse, evaluate, and create media (Aufderheide& Firestone, 1993), are recommended to developed critical viewing and thinking in order to reduce vulnerability to negative media influences (Starsburger& CCMEC, 2010) and enhance active and participating citizens gain value (Kadaruman, 2014b). Most to be noticed, the new technologies, and more broadly the changing social world of citizenship and work, require a new educational response (Cope &Gollings, 2001).

> "Because it is our responsibility to know with critical point of view, as responsible individuals of civil society, to what we are exposed through media messages, what to filter, what to internalize, what to reject and what di deductions we will make from the information we gathered in the face or intensive flow of information." (Treske, 2011, p.34 in Kadaruman, 2015).

A Media Literacy and the Character Education (Constructing Values from Media)

The classical definition of literacy as the ability to read and write print-based material becoming challenged by multimodal and hybrid textual form made of new media technologies, New London Group (2000). NLG proposed the term of literacy becoming multiliteracy to underline what they consider: the influence of new and

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emerging communication technologies on new forms of literacy and growing significance of cultural and linguistic diversity in the world. NLG also suggests that these winds of educational change afflicting educational contexts necessitate that teachers view literacy in a plural sense. Meanwhile, media informs, but not just as a part of society in which it operates, but there are equally important factors influencing that society (Buckingham, 2007: Kellner, 2004: Milivojavic, 2008: ZgrabljicRotar, 2005). We can quite reasonably talk about the media as an integral part of the process of upbringing and education (Ivanovic, 2014), teaching children and young people and giving them information, while promoting norms and values, and introducing them to ways the world function (StanisavljevicPetrovic, 2011). The multiple literacies needed to successfully navigate an increasingly global workplace and society (Khadka, 2018).

According to Kellner (2004), media literacy involves knowledge regarding how media works, how meanings are established, how it serves as cultural pedagogy form and how it functions in daily life. A media literate is a person who has good skills at analyzing media codes and traditions; who is literate in reading media in critical way and expostulating stereotypes, values and ideologies. The elementary school teacher should be able to teach the subjects by digging information through observation, questioning, trial, processing the data or information, and presenting data or information, followed by analyzing, reasoning, then concluding and creating. Besides, all the learning process should be carried out with guided values and moral action.

In this study, media literacy used to refer to the ability to deliver values using media, interpret and construct different possibilities of meanings made by differing text-types associated not only print media but also with digital technologies and multimodal texts such as the internet, digital video, visual images, graphics, and layouts. Students of PGSD UMMI learnt to experiencing media. Experiencing media means that students use their experiences with media in or outside the classroom as a common experiential basis for classroom exploration. The approach also offered as an effort to develop values by making a media project. Therefore, Students should analyze media (print and non-print media) to understand and appreciate their structure and effects. Besides that, they challenged to made their own media to deliver values. So, they should be:

1. Create works in varied media so that they have direct knowledge of how to processing and delivering information;
2. Use varied media, in order to extend and express their understanding and feelings;
3. Understand the process of creating within a given media through experience and practice with media making;
4. Analyze their own transactions with media texts that they made;
5. Analyze media their made to understand biases and values inherent in their media.

Methodology

This research used R&D (Research and Development) design by Borg&Gall (1989). Several methods are used in implementing this research design. The methods are descriptive, evaluative, and experimental. Descriptive method used in the initial study, to collect data on existing conditions, including (1) the condition of products (media literacy learning model) that already exist as a comparison or base material for the product to be developed. (2) the condition of the user such as lecturer, Dean, University and students. (3) the conditions enabling and inhibiting factors include the human element, facilities, and infrastructure, management costs, and the environment. Evaluative methods used to evaluate the development of a product test. Products developed test series then held both outcome and process evaluation. Experimental method used in addition to the experimental group also in the control group. Selection of the experimental group and the control is done randomly. Participants were 30 second grade students from PGSD UMMI Academic year 2017/2018. Data was gathered through observation, questionnaires, and interviews. The research conducted through the following three stages:

1. Preliminary Study

Preliminary study is an early stage or preparation for development. This stage consists of three steps:

a. Literature study (A study to learn concepts about the model that will be developed)
b. Field survey (field survey conducted to collect data relating to the planning and implementation of learning media literacy, especially with regard to the development of literacy skills)
c. Drafting models (The models draft reviewed in a meeting, which was attended by experts in the field of curriculum and learning, language education, and elementary school teachers who are experienced. Based on input from the meeting, the research team held a draft model revised then duplicated as needed)

2. Preliminary field testing and main field testing

In this stage, the first step undertakes limited testing later trials more widely. limited trials for testing conducted on A class students. In this class, 15 students applied the experimental method (single one-shot case study). Researchers observed and note all important things. Both advantages and weaknesses, errors, or irregularities committed by the lecturers at the time of application of learning models. Furthermore, the more extensive trials. At this stage, more research sample of 30 students in two classes A and B.

3. Dissemination and implementation

Test the efficiency of the product is the testing phase of the product, in this study was to test the media literacy learning model to the lesson. Testing is done by using a quasi-experimental method used by the experimental group and the control group (pre-test--post-test control group design). Product testing will be conducted at the research stage further in the second year. Because the time to test the product and socialization takes out the time of this study. Planned product test performed in primary schools in the Sukabumi city, Indonesia.

Findings and Discussion

Research Phase

Character Education based Media learning model emphasizes the creativity of learners. Lecturer task is to manage the class as a team that works together with students to find something new to the class (learners). Lecturers should be managed bored on self-learners and revive motivation to learn them. The media used as a tool to make the students better understand or comprehend the material presented, increased activity, and invite participants vote learners in the learning interaction.

Media experiencing learning activities in the classroom be implemented for achievement of collaborative learning. These activities are divided into: classroom activities (classical activities), working in pairs (pair work), working group (group activities).

At Preliminary study, author made preparations for the development of learning models. study the literature on multi-media learning and pedagogic, conduct a literature study regarding support skills using media, determine the subject of research, and conduct a field survey by interviewing media literacy.

From interviews conclude that students knowing, understand, and use print and non-print in their daily lives, of all students, there are 5 persons involved in the student organization relating to mass media. All students have not been involved in creating of print and non-print works, Support skills in the manufacture of media literacy is still not controlled. The support skills include the skills to operate a camera, computer software (Corel Draw, Photoshop, and WEB/Blog), writing skills with attention to the integration of scientific and skills of how to communicate through the media.

From the field-testing observation was found that subject researchers have literacy skills in a medium stage. Its means that they already fluent to use media, know the functions and able to carry out certain functions, execute more complex operations. Media users can continue according to need. Users know how to obtain and assess information they need, as well as using a strategy for specific information; poor of support skills produce media; Limited support tools (such as newspaper printers, and representative cameras) and poor of suitable Internet access on campus.

Character Education based Media Learning Model

The models and its process drawn as follows.

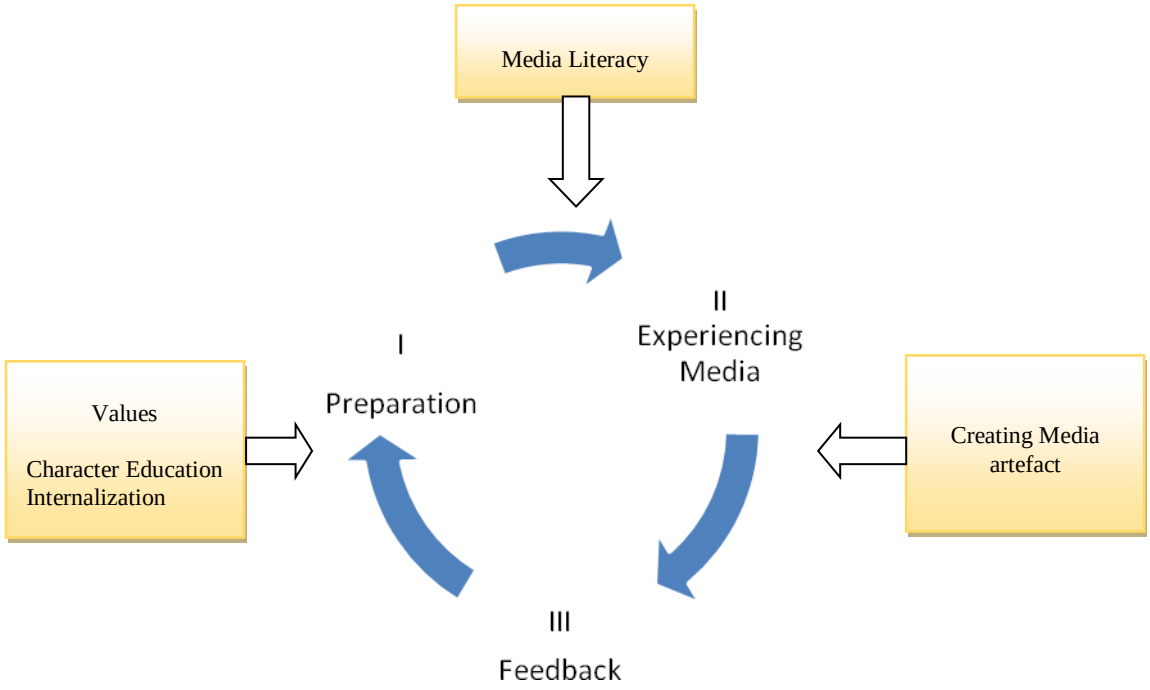

Figure 1. Character Education based Media Learning Model

I. Preparation (student centered class discussion/ reflecting curiosity towards issues)

1. The student has a clear vision about what the media for, the lecturer suggests to inserting a value of character to be cultivated;
2. Divide the class into three groups of media artefact;
3. Explore the existing problem from the student;
4. Detailing the problems and considering what the values on it and how to deliver it;
5. Estimate the information resources to collect data (interviewing, observe, book and internet);
6. Planning the media creating (media artefact) and divide the class into groups;
7. Keeping the courtesy when collecting data or information;
8. Creating a project journal that consist of target activity, activity achievement, and the next activity.

II. Experiencing Media (a groups discussion to formulated the media artefact)

9. Formulated problems they have on their media artefact
10. developing the tools of the media (ex: a draft of questionnaire);
11. Record obtained facts and data on to media artefact;
12. Check the completeness and appropriateness of the data with the goal;
13. Processing on the result of the acquired data.

III. Feed Back (groups discussion to write down the media project report)

14. Write down the report of the project on to newspaper/web/blogs with the other groups as a reader target;
15. Set up the class for the reader circle (each group read the report of the other)
16. A group presentation;
17. Giving feedback (cross checking the aims of the project, the data completeness, the inserting values and the reader targets);
18. Exchange the draft report (to be evaluated by the other groups);
19. Reflecting all the observable processes by asking a question
20. Revise the draft;
21. Publishing.

We designed a course focus on analyzing a rhetorical media artefact, creating multimedia argument essay for specific audiences, and making a product or presentation in a web form. Towards these outcomes, students produced multiple version in their product or presentation process. They also revised and edited those draft/versions keeping in view of audience factors and values embodied at hand individually or in groups.

Student Media Literacy Improvement

We use six indicators to evaluate student's media literacy skills, thus are:

1. Student are able to determine the nurture and scope of their information needs;
2. Student can access the information they need effectively;
3. Student can evaluate the source of information critically and determine whether it affects the values they have;
4. Student individually or in groups are able to use information to create media or presentations and internalization values;
5. Student individually or in groups are able to communicate media products or presentations effectively;
6. Students provide recognition of the use of resources to communicate their products or presentations;

These indicators evaluate by observation during the learning process in a Bahasa course subject. The improvement of media literacy skills is show in Table 1.

Table 1 Improvement Percentage of30 Students Media Literacy Skills Beforeand After The Learning Model Implementation

Indicators	**% Before**	**% After**
determine the nurture and scope of their information needs	33	100
access the information they need effectively	20	97
evaluate the source of information critically and determine whether it affects the values they have	3	97
use information to create media or presentations and internalization values	3	100
communicate media products or presentations effectively	7	83
provide recognition of the use of resources to communicate their products or presentations	33	100

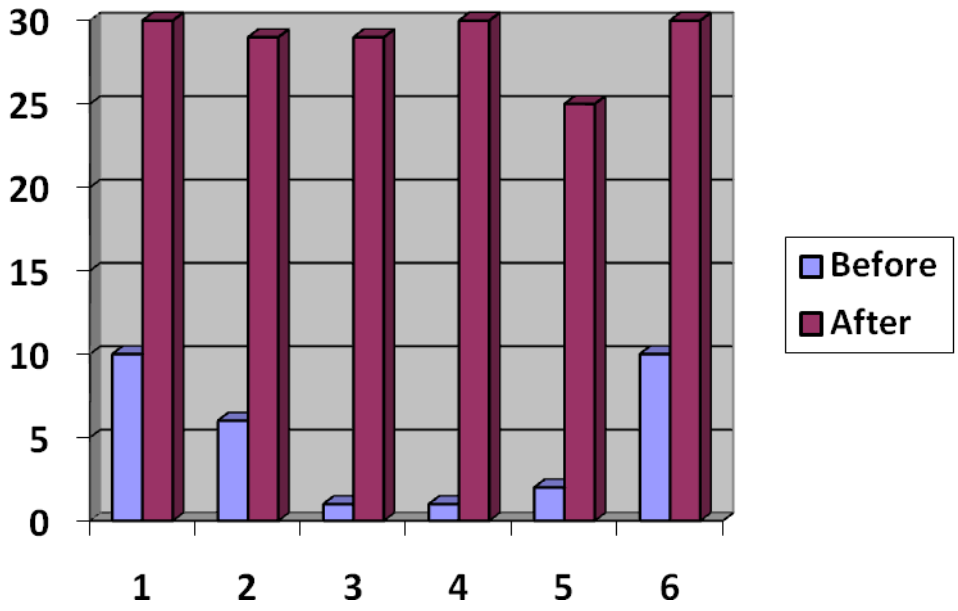

Figure 2. The Number of Student with the appearance of each indicator Before and After Implementing The Learning Model

Table 1. Shows what percentage and figure 2. Shows how many of students who master the ability of media literacy based on six indicators before and after the implementation of the learning model. Before the implementation, there is only one student (3%) who can evaluate the source of information critically and determine whether it affects the values they have and use information to create media or presentations and internalization values. Two students (7%) who can communicate media products or presentations effectively using digital media, six students (20%) who can access the information they need effectively and ten students (33%) who can determine the nurture and scope of their information needs and provide recognition of the use of resources to communicate their products or presentations.

After the implementation of the learning model all students (100%) can determine whether it affects the values they have, use information to create media or presentations and internalization values, and provide recognition of the use of resources to communicate their products or presentations. 29 students (97%) can access the information they need effectively and evaluate the source of information critically and determine whether it affects the values they have. 27 (83%) students can communicate media products or presentations effectively using digital media. Its means that the student's media literacy skills after the learning model implementation is arise.

Conclusion

The goal of this study was to investigate the students engaged in literacy practice as a process of social construction where they experiencing media. Character Education based Media Literacy learning models can be used as an approach in effort to achievement national education goals. Learning process with this approach teaches not only the right one but also the wrong character that appear in learning. Moreover, it invests the habit of good things to the students so that they understand which one is right and wrong (cognitively), they able to feel the right one (affectively),and used to do it (psycho-motoric). In sum, it invokes not only moral knowing but also moral feeling, and moral action.

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CAREER DECISION AND K TO 12 CURRICULUM EXITS OF SENIOR HIGH SCHOOL STUDENTS

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Abstract: The first batch of the K to 12 Curriculum are about to graduate this year and many senior high students were hesitant and worried if they will be able to land a job, a business on his own, proceed to college or take higher vocational course. To address these concerns and worries of the Grade 12 graduating students, an action research was proposed. The purpose of this study was to examine the career decision of the students and how it relates to the K to 12 Curriculum Exits (*Trabaho, Negosyo, Kolehiyo, and Middle Skills Development*). This study used the mixed method design. Research-made questionnaire were administered to 324 students using the universal sampling method. On the other hand, eight students were selected as participants for focus-group discussion (FGD). Percentage and ranking were utilized as statistical tool for this study. Results revealed that majority of the student's career decision after graduation will enroll to college/university (57.4%), followed by find a job (34.9%), enroll to a vocational school (4.9%), have his own business (1.9%), and some were undecided (0.9%). Findings were utilized by teachers and career advocates by creating a program that will help the students decide of what to take after graduation. Thus, a three-day senior high school Curriculum Exits – Fair (Job-Fair, Business Demonstrations, College/University and Vocational fair) were implemented.

Keywords: career decision, K to 12, senior high school

Introduction

Career decision is very important for a senior high school graduating student to take although doing it is a lifelong process (Georgia Career Information Center, 2013). It is a continuous process throughout the development of a person.

Prior to the implementation of the K to 12 Curriculum program, problems and challenges were already identified by the Department of Education based on their studies. Among of those, Philippines is the last country in Asia and one of only three countries in the world (the other two being Djibouti and Angola of Africa) with a ten-year pre-university program. In addition, poor quality of basic education was reflected in the inadequate preparation of high school graduates for the world of work which contributes to the relatively high unemployment rate among the young and the educated (Care, E. & Valenzuela, E. (2012).

As the first batch of the K to 12 Curriculum program is about to graduate, many senior high school students were hesitant and worried if they will be able to land a job, establish a business on his/her own, proceed to college or take higher vocational course. Although, the DepEd has already prepared the students to decide the possible career exits they will have through the Career Guidance Program (DO 41, s. 2015), but still uncertainty still do exist to the minds of the Grade 12 students of Sta. Cruz National High School.

To address these concerns and worries of the Grade 12 graduating students, the Senior High School focal person proposes to do this action research.

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General Objectives

This study aimed to find out the career decisions of the Grade 12 graduating senior high school students of Sta. Cruz National High School and how it relates to the K to 12 Curriculum Exits. Specifically, it aimed:

1. determine the career decision of the Grade 12 students after graduation.

2. identify whether the career decision of the Grade 12 students after graduation were based on the K to 12 Curriculum Exits – *Trabaho, Negosyo, Kolehiyo, and Middle Skills Development.*

3. develop an Intervention Program that will help Grade 12 graduating students strengthen their career plans after graduation.

Significance f the Study

This study examined the possible career decision exits of the Grade 12 graduating students of Sta. Cruz National High School based on the K to 12 Curriculum Exits such as *Trabaho, Negosyo, Kolehiyo, and Middle Skills Development*.

Through this action research, teachers and career advocates able to create programs and interventions on how to strengthen the student's career planning and decision making. Also, the students are the benefactors of the result of the study particularly in helping them decide of what career to pursue after graduation.

Thus, in the context of conducting further research, this study provides an avenue to conduct another action research such as a tracer study. Moreover, the information that generated from this study will be used to trace the students' status whether the career decisions they take were realized based on the Curriculum Exits provided.

Scope and Limitation

This mixed method research were intended to all Grade 12 graduating senior high school students who are currently enrolled at Santa Cruz National High School, in the Division of Davao del Sur.

This study was conducted during the month of January 2018.

Research Questions

This study sought to find out what are the career decision of the Grade 12 graduating students. This answered the following specific questions:

1. What is the profile of the students in terms of:

    1.1 Gender;

    1.2 Age;

    1.3 Track;

    1.4 Strand?

2. What is the career decision of the Grade 12 students based on the Curriculum Exits presented to them in terms of:

2.1 Trabaho;

2.2 Negosyo;

2.3 Kolehiyo;

2.4 Middle Skills Development?

Methods

Research Design

This study used the mixed method design which focused on the collecting, analyzing, and mixing both quantitative and qualitative data in a single study (Creswell, J. W., & Plano Clark, V. L., 2011). A purposive sampling was employed in selecting the sample wherein all the Grade 12 graduating senior high school students were the participants of this study. Also, a purposeful random sampling was utilized in the selection of focus group discussion (FGD) to provide in-depth data about the subject matter under this study (Patton, 1990). Eight students from the different strands were chosen to represent as the FGD participants.

Research Locale

This study was conducted in Santa Cruz National High School, Division of Davao del Sur.

Participants

The main research participants were the Grade 12 senior high school students of Santa Cruz National High School, this school year 2017-2018.

Instruments

A researcher-made questionnaire was used as a survey tool to generate what career decision of the students after they graduate senior high school. The research-made questionnaire was composed of two parts. Part I was the demographic survey in which the participants were asked to answer the following: gender, age, track, and strand. The Part II, on the other hand, were the Curriculum Exits to which students may choose after they graduate from senior high school. This may either be Trabaho, Negosyo, Kolehiyo, and Middle Skills Development.

Aside from the survey questionnaire, the researcher intended to conduct Focus Group Discussion (FGD) wherein eight (8) Grade 12 senior high school students were selected and represented the eight strand or course offering of the school. The school offers the following strand: General Academic Strand (GAS), Science, Technology, Engineering, and Mathematics (STEM), Humanities and Social Sciences (HUMSS), Accountancy, Business, and Management (ABM), Home Economics – Caregiving, Home Economics – Bread and Pastry Production, Food and Beverages Servicing, and Cookery, Industrial Arts – Electrical Installation and Maintenance, and ICT – Computer Systems Servicing. The purpose of this FGD was to understand the reasons of student's career decision and to strengthen the result of the study.

Data Gathering Procedures

In collecting the data, the researcher asked permission from the school head to conduct this mixed method research. After the approval, the Grade 12 students were asked to answer the researcher-made questionnaire for the survey. Then, a purposeful random sampling was conducted for the identification of the selected informants of this inquiry or focus-group discussion (FGD) for deeper understanding of the study. In-depth interview was conducted to the eight selected students from each strand during vacant times to avoid disruption of classes.

The collected data were treated using the following simple statistics, i.e., frequency, percentage and ranking. Further, responses from the FGD were gathered to support to the results of the survey conducted.

Findings and Analysis

The results of the study entitled, "Career Decision and K to 12 Curriculum Exits of Senior High School students" are presented in this section.

1. Profile of the Students

1.1 Based on the data of gender, from a total of 324 senior high school students, 164 were female (51%) and 160 were male (49%).

Table 1. Profile of the students based on Gender

Gender	*f*	Percentage
Male	160	49%
Female	164	51%
Total	324	100%

1.2 The age of the students involved in this study ranged from 17 years old to 23 years old. Students who are of age 18 were the highest number of participants with a percentage of 51.2%.

Table 2. Profile of the students based on Age

Age	*F*	Percentage
17	103	31.8%
18	166	51.2%
19	33	10.2%
20	17	5.2%
21	4	1.2%
23	1	0.3%

1.3 Most of the respondent-students of the study were Technical Vocational and Livelihood (TVL) track with a percentage of 55%. The Academic track respondents-students were only 45%.

Table 3. Profile of the students based on Track

Track	*F*	Percentage
Academic	145	45%
Technical Vocational and Livelihood (TVL)	179	55%
Total	324	100%

1.4 The respondent-students were from Academic Track with four strands namely General Academic Strand (GAS) with 9%, Science, Technology, Engineering, and Mathematics (STEM) with 12%, Humanities and Social Sciences (HUMSS) with 13%, and Accountancy, Business, and Management (ABM) with 10%. While for Technical Vocational and Livelihood track with four offerings namely Home Economics – Caregiving with 10%, Home Economics – Bread and Pastry Production/Food Beverages Servicing/Cookery with 11%, ICT – Computer Systems Servicing with 14% and Industrial Arts – Electrical Installation and Maintenance with 20%. Most of the participants were Electrical Installation and Maintenance students.

Table 4. Profile of the students based on Strand

STRAND	*f*	Percentage
General Academic Strand (GAS)	30	9%
Science, Technology, Engineering, and Mathematics (STEM)	39	12%
Humanities and Social Sciences (HUMSS)	43	13%
Accountancy, Business, and Management (ABM)	33	10%
Home Economics – Caregiving	32	10%
Home Economics – Bread and Pastry Production/Food Beverages Servicing/Cookery	37	11%
ICT – Computer Systems Servicing	44	14%
Industrial Arts – Electrical Installation and Maintenance	66	20%

2. Career Decision of Grade 12 students Based on the K to 12 Curriculum Exits

Students were asked what their career decision after graduation will be based on K to 12 Curriculum Exits *(Trabaho, Negosyo, Kolehiyo, and Middle Skills Development*). Based on the survey, results show that students decide to continue their college *(Kolehiyo)* with 57.4%, followed by finding a job *(Trabaho)* with 34.9%, Middle Skills Development with 4.9%, Negosyo with 1.9%. Also, it revealed that some will go to college while they are having some part-time job which was classified as Other options in the survey questionnaire. It has 0.9%.

The result of the survey was supported with the FGD conducted to eight students from different strands. They were interviewed and were asked about their reasons why they choose those career options. Among the eight (8) FGD respondents, six (6) answered they wanted to continue their studies and enter to college. Two (2) of the respondents wanted to find a job because they want to help their parents due to financial difficulty.

Majority of the students preferred to proceed to college (Kolehiyo) simply because Filipinos believe that education plays an important role in the country's progress and it helps people to become better and productive citizens. Aside from that education helps solve the unemployment problem which poses a hindrance to the growth of the nation (De Guzman, 2015).

Table 5. Career Decision based on K to 12 Curriculum Exits

Curriculum Exits	*f*	Percentage	Rank
Trabaho	113	34.9%	2
Negosyo	6	1.9%	4
Kolehiyo	186	57.4%	1
Middle Skills Development	16	4.9%	3
Other options	3	0.9%	5

Conclusions

The shift of curriculum from Basic Education Curriculum (BEC) to K to 12 Curriculum emphasized honing the skills and career pathways of Filipino learners. K to 12 Curriculum prepared students to be globally competent individuals. Moreover, it was emphasized in the senior high school program the importance of career decision and the four curriculum exits *(Trabaho, Negosyo, Kolehiyo, and Middle Skills Development.*

Based on the findings, majority of the senior high school graduating students were geared towards pursuing their studies to higher education *(Kolehiyo)*. Also, it is significantly noticeable that some students wanted to find a job after graduation *(Trabaho)*. Although, career guidance is being highlighted in the curriculum program, there are still students who can't decide of what to take after graduation.

Further Actions Done

Given the results of the study, the researcher recommended to the principal to conduct a three-day Senior High School Curriculum Exits Fair which would aim to help the first batch of K to 12 graduates land the different curriculum exits – Trabaho, Negosyo, Kolehiyo, & Middle Skills Development. The three-day activity corresponds to Job Fair, Business Fair, and College/University and Vocational School Fair for the students to decide what career they want after graduation.

After the three-day Senior High School Curriculum Exit Fair, the researcher will propose and conduct another action research study on the impact of the said activity to graduating students. Furthermore, the first batch of K to 12 graduates are subjects for a tracer study -- to locate and to know where the students landed after the graduation from high school whether they find a job (Trabaho), engage into business (Negosyo), enroll to college/university (Kolehiyo), or enroll to a Technical Vocational school (Middle Skills Development).

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AN ACTION RESEARCH: ENHANCING LEARNING IN UNDERGRADUATE INTRODUCTORY PHYSICS COURSES USING PHOTOVOICE

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Abstract: Photovoice is a pedagogical tool that enables a teacher to learn about her teaching effectiveness by having students express their understanding of the concepts learned in class through photos taken by the students themselves. This study is a practical action research that examines the viability of photovoice as a classroom activity in supplementing and enhancing the learning process of students in undergraduate introductory physics courses. Participants in this study consists of students from the General Physics II (Electricity and Magnetism) class of the author. A total of 98 students are in the class. Twenty-eight students participated in the photovoice activity where they took photos, recorded events, reflected on their everyday experiences, and relate them to the physics concepts learned in the class. The students then share their photographs and experiences in a group discussion with their classmates. Findings show teachers gain qualitative data to evaluate students' understanding of the topic and students develop a more personal appreciation of the topics as they reflect and explain the physics behind their photos to their classmates. The process enhances students' interests in learning the lesson. Photovoice gives teachers a good supplemental tool in enhancing student learning and appreciation of physics.

Keywords: formative assessment, undergraduates, photovoice, physics

Introduction

Physics is a fundamental science that deals with the study of the physical universe and has everyday applications to people's lives. It is not a standalone field and its principles can be applied to a wide variety of fields of science. Hence, a number of undergraduate degree programs require an introductory physics course in their curricula. Taking an introductory physics course provides students with not just an understanding of the physical universe, how things work, and how physics is related, relevant, and useful to their lives and chosen fields of study, but also helps them develop skills in analytical and critical thinking (Wartono, et al., 2018). However, physics has a reputation among students to be a difficult subject. Students can find it to be daunting and difficult because it requires them to use various methods of understanding and to relate one method to the others using constructs such as words, tables of numbers, graphs, equations, diagrams, and maps (Redish, 1994). Students' preconceived view of physics as a difficult subject can affect how well they can develop a conceptual understanding of the topic (May and Etkina, 2002, Orknek et al., 2008).

Teachers play a vital role in motivating student to learn a course that is stereotyped to be difficult. Nowadays, multiple studies suggest a variety of instructional approaches that a teacher can use in the classroom to improve students' perception and understanding of physics. One of these is the use of the constructivist approach (Özmen, 2004). The constructivist approach assists students in relating new knowledge to their previous knowledge by using educational activities that are linked to everyday events (Hammer, 1994; Whiteleggy and Parry, 1999; Özmen, 2004; Örnek et al., 2008). Associating class lessons to everyday life could increase students' interests in physics. This can make conceptual teaching more efficient since it would provide an opportunity for students to re-examine their prior knowledge with everyday life experiences (Coştu et al., 2007). The constructivist approach not only includes teachers' assessment of the students but also the students' self-assessment. These self-assessments can build the students' self-confidence (Olina and Sullivan, 2004) and are also an opportunity for the teacher to evaluate his/her teaching methods. Thus, this study was conducted to

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examine the viability of photovoice, used as a series of class activities, to allow the teacher to evaluate her teaching methods via students' self-assessment by relating physics to their life experiences.

Photovoice was introduced by Carolyn Wang and Mary Ann Burris in 1994. It is a participatory action research strategy that is used to provide voice to marginalized sectors of the population who are silenced in the political arena (Wang and Burris, 1994). It involves ethnographic techniques with participants taking photos, selecting photos that most accurately reflect the issues, and communicating their concerns by exposing social problems and promoting social change (Liebenberg, 2018). Photovoice provides authentic data from participants in issues such as health (Carlson et al., 2006), women involvement (Frohmann, 2005), and ethnic diversity (Radley et al, 2005). Photovoice can also be employed as an educational tool that is usually done as a class activity (Manohar et al., 2013). It could provide teachers a way to assess students' learning, enables students to assess themselves (Behrendt & Machtmes, 2016), and introduce students to novel ways of creating knowledge (Schell et al., 2009). Currently, there are few studies conducted on the use of photovoice as a tool for learning physics in undergraduate introductory physics courses. Hence, this study discusses the process and results of the action research to investigate the teacher's method in using photovoice as a supplementary tool in an introductory physics course.

Method

Context

This study follows a practical action research design seeking to improve specific and local issues such as the improvement of a teacher's instructional activities in the classroom (Creswell, 2012). It involves a cyclic process where the teacher-researcher (1) IDENTIFY the issue, which includes defining the area of focus and doing self-reflection, (2) devices a PLAN to solve the issue, (3) perform ACTION to implement the plan, (4) ANALYZE the data, and (5) REFLECT on the results. This study discusses the first cycle of the action research.

Data Collection and Analysis

The teacher-researcher gathered and analyzed the following data for the study: (1) the collage of photos, (2) reflection paper from students who did and did not perform the photovoice activity, (3) teacher's observations and reflection, and (4) focus group discussions to clarify and verify the teacher's observations and reflection. These data were examined, coded, cross-examined and categorized for themes.

Results

Discussed in this section is the first cycle of the action research on the viability of photovoice as a class activity to enhance undergraduate non-physics students' understanding and appreciation of Electricity and Magnetism concepts taken in General Physics II class of the teacher-researcher.

Identifying the Issue:

The teacher-researcher conducted a course orientation, followed by an informal classroom survey during the first meeting of the semester to identify possible issues and target area of focus to help the students learn better. The survey included questions about their experiences in studying physics, expectations in class, and activities that could help them be successful in class. The students were told to answer them sincerely as the results will be used to identify additional classroom activities. The results of the informal survey showed that most students find physics to be difficult subject due to its abstract nature, the obscure way that it was taught to them in high school, and their inability to juggle studying all the courses in a semester. The survey results also showed that although they find physics to be a difficult subject, a few students find it interesting, fun and informative.

Furthermore, the survey mentioned that student understanding of the lesson might be enhanced if they could see the use of learning it from the applications found it in their lives and that they are not stuck in just solving problems and deriving equations.

Plan

To incorporate students' issues, positive feedback, and suggestions, we included four (4) additional classroom activities. These activities aim to make physics less abstract. The student had to choose one from these activities to supplement the process of learning the topics taught in class. Activity guidelines, including the scoring rubric and the submission schedule, were carefully composed to ensure that they would not become an excessive burden for students while performing the activity.

Photovoice was one of the additional classroom activities we instituted in the class. We would like to find if it could help students visualize the topics and let them realize the applications to their everyday activities. Students were required to take at least 10 photos of their surroundings that they think might be related to the electricity and magnetism topics discussed in class. They then create a collage, together with captions, of the photos they have taken. The captions should include their answers to the following questions: (1) what do can we see in this photo? (2) What's really happening in this photo? (3) How does this relate to physics and their lives? The submission of the photovoice activity was set on the 27th meeting, or about 2.5 weeks before the end of the semester, and students were required to post their work in an online platform for the class. The students then had one week to view and reflect on each other's work. A reflection paper about their experiences doing the photovoice and their views on other's submissions was then required to be submitted on the 30th meeting, or a week before the semester ends. On the 32th meeting, i.e., last day of the semester, a classroom discussion about the activity was held.

Action

The photovoice activity was announced during the 2nd meeting of the semester. Students responded positively and enthusiastically. Students were then regularly, i.e., every two weeks, reminded about the requirements of the activity. Twenty-eight students submitted their work via Edmodo, the online platform used by the class. Sample submissions are shown in Figures 1 - 4. Reflection and discussion forums were successfully organized with valuable insights from the students, including those who did not try the activity but were able to view their classmates' work.

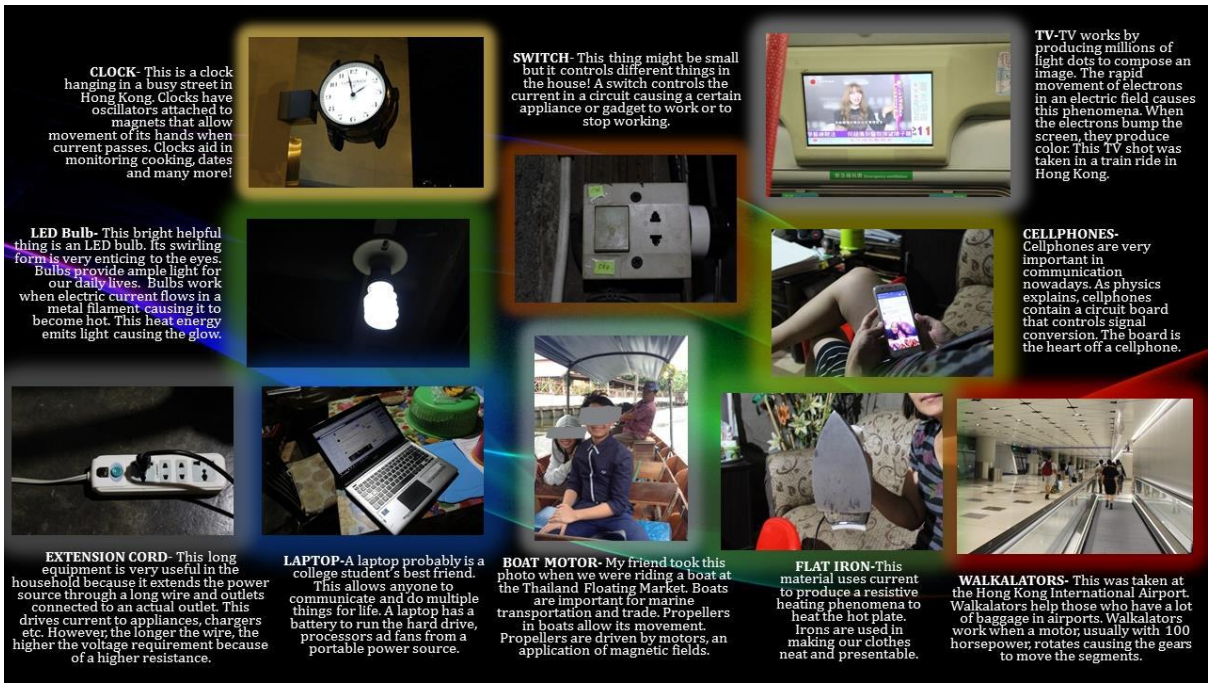

Figure 1. A sample work from participant L7L.

Figure 2. A sample work from participant

Figure 3. A sample work from participant R7L.

Figure 4. A sample work from participant no. A3L.

Analyze

Students' photos, reflections, interviews, and focus discussions and the teacher's careful observations were used to find themes for the students' experience on using photovoice as a supplementary tool in undergraduate introductory physics course.

Based on the data, students joined the activity as they saw it as a new experience in learning a concept. They find it as a recreational activity that helped them assess their learning and explore physics in their lives.

Students find the photovoice activity as educational since the students were able to increase their understanding of the lesson better and it allows them to assess their learning through reflection. As participant R7L mentioned, "I like the fact that it broadened my knowledge about physics and it made me aware of the physics concepts around me". Participant P1L also mentioned the Photovoice activity "was informative and it made the abstract concepts and theories a bit more tangible".

Students also find the photovoice activity to be relevant since they were able to relate the lessons learned in class to their everyday life. As participant J7L mentioned, "What I like about Photovoice is that it reminds me how Physics concept makes my life more comfortable and easier". This participant also mentioned that while doing the activity, it refreshed her knowledge in physics and made her realize that studying physics more helps make her life even better since she can apply the concepts in real life situations. Also, participant E4L realized the importance of the activity when trying to find out about the physics in their everyday activities. This participant even gave an example and said, "I've always wondered why there are three prong plugs & turns out that the third prong actually has a use".

Furthermore, students also find the photovoice activity as fun since it gives them a novel way to comprehend and appreciate the lessons. Participant L7L said: "I was able to browse through my old pictures and I really enjoyed taking the trip down memory lane. The nostalgia and good memories all came back". Some students also like the activity since they were able to do what they love to do, which was photography, and at the same time they learn more about physics. Participant L6L even mentioned "I had fun doing the activity since I like how I have to walk around to take pictures". Participant S3L also said that "It was fun to do and it releases the artist/physicist in me". Another student, participant C1L also said that "It is not a burden but actually fun to do because this is the best time to appreciate physics and change our lifestyle to even save more money like in electricity bills".

Challenges associated with this assignment was centered on the skills of the students to lay out their photos and time management. For instance, some students said that they had hard time since there were too many photos to be placed in one page and there were so many possibilities and photos to choose. Interestingly, this can be viewed positively as a benefit if considered part of honing their decision-making skills. The time management challenge was from the students who did not take part in the photovoice activity but found it relevant and useful. Students decided not to do the activity because they had issues with managing their time in finishing the activity and their other courses activities.

Reflect

Based on the gathered data and our observations, the photovoice activity can provide the teacher with qualitative evidence to evaluate student understanding of the topic. In addition, students develop a more personal appreciation of physics since they reflect and explain the physics behind their photos to their classmates and makes them more eager to learn the lesson. The students even mentioned that this activity is unique and it makes them eager to try out. When they did try, they loved it as they are learning while relaxing and having fun. Students who took part in the activity do still find physics to be a difficult subject even after the semester. However, most of the students view improved and they have become more enthusiastic when they experienced

and saw the relevance of learning physics using the tool they love to use, i.e., their camera. Even the students who did not participate in the activity but had a chance to look at their classmates' work were amazed with the things they've seen and learned. Participant C3L even shared that even her siblings learned about physics and said that "The way my siblings ask what my project is all about and they are amazed that physics is actually around us, except that we just don't realize it".

Although our data indicates that photovoice is a good supplemental activity in teaching an introductory electricity and magnetism class, there are still areas for improvement. For example, in putting the photos together, instead of making a photo collage we can let the students present the photos in any form they want. This will remove the post production issue and lay outing of the photos. In addition, this can remove the issue on the limitation of the number of photos to be included in a collage and increase more learning about other things since the students get more chances to reflect. Furthermore, this may unleash student creativity and they will not feel burdened with the post production.

Another area for improvement is to choose a more suitable schedule to submit the output of the activity. It may be more beneficial if the students will be given two to three schedules of submission right after completion of the lecture discussions for 3 to 4 topics and a weekly reminder instead of once every two weeks. The additional number of submissions may also prevent the pile-up of photos and a clear focus on a particular topic whose phots are to be taken. In addition, this may help students to start early and will not compete with other courses and end-of-the-semester deadlines. This may also increase the number of participants volunteering to join the activity.

Overall, the photovoice activity helps physics befriends students and as participant L5L said, "this photovoice activity, if posted and shared everywhere (social media, campus, etc) could spark the interest of young brilliant minds about physics and inspire them to innovate and invent/create".

Conclusion

The photovoice activity allows the teacher-researcher to reflect on her teaching methods and locate points for improvement. This study shows that the activity can be utilized in the classroom and may be tailored to address specific needs of the students in learning the topics discussed in class. Furthermore, it can enable teachers to assess the effectiveness of their teaching methods based on the performance of the students within the activity. It is therefore both a good supplemental tool in enhancing student learning and an assessment tool in improving a teacher's method of teaching.

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IMPROVING THE QUALITY OF LEARNING ENVIRONMENT THROUGH PROCESS ORIENTED GUIDED INQUIRY LEARNING (POGIL) ENRICHED BY SOCIOSCIENTIFIC ISSUES (SSI) ON CHEMISTRY SOLUTION

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Abstract: The main goal of science/chemistry education is achieving scientific literacy for all students. For this purpose, there are some competencies and skills need to be developed in a supporting learning environment. This study aimed to examine students' perceptions on learning environment in the POGIL –SSI instruction in the chemistry solution topic. A quasi experiment with posttest only was designed. The subject consisted of 85 high school students who divided into Experiment group 1 (N = 28), Experiment group 2 (N = 29), and Contol group (N = 28) and were teached using POGIL–SSI, POGIL, and conventional instructions, respectively. Data of students' perceptions was collected using WIHIC instrument (Cronbach Apha = 0.943) and analized using One-Way ANOVA and Post-Hoc LSD test. The result shows that there is a significant difference on students' perceptions among the three groups. However, Experiment group 1 is not significantly different from Experiment gorup 2.

Keywords: Process Oriented Guided Inquiry Learning (POGIL), Socioscientific Issues (SSI), Learning Environment.

Introduction

One effort to create a positive and productive learning experience in the classroom is to provide an effective learning environment for students (Slavin, 2006: 351). Learning environment is an important factor in learning, because it can affect student attitudes and achievement (Fraser, 1999). Various studies on the learning environment have been conducted by researchers in various countries and various fields of study. The achievement of Indonesian students' learning at international level is reflected in the PISA test results conducted since 2000. The result of PISA's last evaluation in 2015, Indonesia ranks 64th (Rahayu, 2015). This sequence shows that students' learning achievement including students' literacy ability is low. One possible cause is science learning process in Indonesia is still dominated by lecture methods. This is supported by the results of research Rahmat (2010) on the study of methods of learning Biology in schools that shows that the method used by teachers in teaching from one subject to another subject less innovative and inclined to teacher-centered by using lecture method. The reason teachers still use lecture methods based on the results of questionnaires given by Rahmat (2010) include: 1) to overcome the limitations of learning time; 2) to be easy to manage classroom; 3) to be easy to implement; 4) have speaking skills; and 5) teachers' attention is not divided. The application of this lecture method has an impact on the students' ineffective learning environment because students tend to be passive and rigid (Taylor and Teddlie, 1992). This is supported by the research results by Acat & Donmez (2009) which states that teacher-centered instruction gives a worse effect on students' learning environments when learning about science and technology.

It requires a student-centered learning approach that can provide a better learning environment for students so that they can learn better and have scientific literacy as their provision to face the globalization era of the 21st century (Rahayu, 2017). Because as we know that along with the development of the era in the 21st century, many problems that arise in society caused by the development of science and technology. These problems

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require the settlement of a society with good literacy. People who are science literate are those who have the ability of science and are able to apply their understanding to solve societal / social, environmental and moral issues of science. To achieve that required various skills such as argumentation skills, critical thinking and problem solving. Therefore, the ability of science literacy to be very important to be taught to students in school and become the main goal in science learning (Rahayu, 2017).

In this research, the selected learning approach was inquiry approach with Process Oriented Guided Inquiry Leaning (POGIL) model. This model was chosen because POGIL was developed not only to help students understand content but also the process skills. In its implementation POGIL used study groups, guided discovery activities, problem solving, questions to train critical and analytical thinking, reporting, metacognition and personal responsibility (Hanson, 2006) reflected in the learning stages of POGIL. The five stages of POGIL were orientation, exploration, concept formation, application and closure. The POGIL model was then enriched with socio-scientific issue (SSI) as a learning context. The use of SSI in POGIL was based on suggestions from previous researchers, one of which was Eastwood et al. (2013), stating that there was a need for an approach that integrated the scientific and explicit and explicit social problems, so that SSI could be used to develop students' scientific views of a phenomenon. Therefore, this study aims to determine students' perceptions of the learning environment amongst students who were taught by POGIL enriched with SSI, by POGIL only and by conventional method of learning.

Theoretical Framework

Learning Environment

Learning environment is defined both as a space of either closed or open spaces and also be defined as social, psychological and pedagogical contexts that may affect learning, learning achievement and student attitudes (Abdullah et al, 2013). The definition is based on two major components of the learning environment according to Fraser (1994). These two components are physical components and psychosocial components. Physical components include classrooms and teaching and learning facilities both in the classroom and outside the classroom. While the psychosocial components include all interactions that occur between teachers and students, students and students and students with their environment. The concept of a learning environment was initiated by Lewin and Murray in his research on human behavior around the 1930s. Since then many studies have sprung up and become an inspiration for other researchers to develop a questionnaire that is used to find out what students feel about their learning environment. Among the types of questionnaires are Learning Environment Inventory (LEI) (Walberg, 1968), School Level Environment Questionnaire (SLEQ) (Johnson & Stevens, 2001; Rentoul & Fraser, 1983), Individualized Classroom Environment Questionnaire (ICEQ) (Fraser, 1990) and Computer Classroom Environment Inventory (CCEI) (Maor & Fraser, 1996). The learning environment gives different effects to the individual. That is why the learning environment is personal. Any activities and interactions that occur in the classroom will shape the students' construction of their learning environment (Lorsbach & Basolo, 1998). According to Slavin (2006), efforts to provide an effective learning environment are to prevent bad behavior, use time effectively, and create an atmosphere conducive to discovery activities and activities involving the mind and imagination.

WIHIC

What Is Happening in This Classroom (WIHIC) is one of the questionnaires used to determine the condition of the learning environment in the classroom. The questionnaire was developed by Fraser, Fisher and McRobbie (1996) by combining the previous version modification questionnaire with additional aspects such as equity. This questionnaire has seven aspects that are measured. These seven aspects include Student Cohesiveness (measuring the extent to which students know, help and support each other in the classroom); Teacher support (measures the extent to which teachers help, be friend to other students, trust and show interest in students about

their work); Task Orientation (measure the extent to which tasks can be completed and remain on learning materials); Involvement (measure the extent to which students have full attention, participate in discussions, do additional work and enjoy class); Investigation (measures the extent to which instruction emphasizes the skills and processes of discovery and its usefulness for solving problems in investigations); Cooperation (measures the extent to which students work with other students during learning); Equity (measures the extent to which teachers give equal treatment to each student, including giving praise, questions and opportunities to engage in discussion). There are negative and positive questions on every aspect (den Brok et al, 2010; Aldridge et al., 2009).

Process Oriented Guided-Inquiry Learning

Process Oriented Guided-Inquiry Learning is one of the models based on the inquiry approach. In POGIL, students work in teams with certain designed activities so that students could master the content and science process skills well (Hanson, 2006). This model was developed based on Bransford et al. research on cognitive science. The study concludes that most students can learn very well when they are in a research-based learning environment, that is when students are actively involved in data or analysis activities, discussion activities, working in groups to understand the content or to solve problems, reflect and evaluate to be better and when they interact with teachers as facilitators (Hanson and Moog, 2007). The model has five stages of learning that is orientation, exploration, concept formation, application and closure (Hanson, 2007). Several studies have been conducted to test the effectiveness of applying this model at different levels and subject matter. One such study is the Ruder & Hunnicutt (2008) study which states that the application of the POGIL model succeeded in significantly changing the learning environment compared to the small classes. Based on these studies, students who were taught by using POGIL were very attentive, so the classroom atmosphere became interactive through group work in the classroom. In this study, students in groups have four roles to maximize group work, ie managers, recorders, presenters and reflectors (Hanson, 2006). The manager is in charge of keeping the team focused on completing the task and ensuring all members participate and understand what is being discussed. The recorder is responsible for recording the results of the discussion and preparing reports. The presenter is in charge of presenting the results of the discussions to the students in the class. While the reflector is responsible for identifying the problem solving strategy and record it.

Socioscientific Issue (SSI)

Socioscientific problems are a controversial issue in societies relating to science and their resolution involves moral and ethical review (Zeidlers & Nicols, 2009). They are also defined as socially explicable social problems (Eastwood et al., 2012; Reis & Galvao, 2009; Sadler, 2004; Sadler et al., 2007; Sadler & Zeilder, 2004). The sociocultural problem is different from other science problems because it involves many aspects and has many solutions (Yahaya, 2016). The other features of this sociocontific problem are 1) open-ended, because they do not have direct answers right and wrong; 2) poorly structured, because it is controversial in society and has an explanation of various aspects; and 3) is debatable (Sadler & Zeidler, 2005). Usually to solve this problem is packaged in discussion or dialogue and even debate. Through these activities, students are required to participate actively in developing argumentative skills, the ability to distinguish between science and non-science problems and the ability to recognize reliable evidence and data as the basis of arguments (Zeidlers & Nicols, 2009). According to Eastwood et al (2012), the provision of socioscientific societies may involve students in the process or activity of discovery in the class.

Method

Research Design

This research ulilized quasy experimental design with posttest only control group design to examine students' perceptions of learning environment. The design involved 3 research groups, namely experimental group I, experimental group II, and control group. The first experimental group was students taught using Processed Guided Inquiry Learning model enriched by socioscientific issues (SSI), the second experimental group was students taught using Process Oriented Guided Inquiry Learning model (POGIL) only, while the control group was students conventionally taught using methods of confirmation and discussion. The study design is illustrated in Table 1 below.

Table 1 Research Design

Group	Treatment	Post-test
Experiment I	X_1	O
Experiment II	X_2	O
Control	-	O

(Adapted from Creswell, 2012)

Note:

O : Observation (post-test of students' perception on learning)

X1 : Learning using POGIL enriched by SSI

X2 : Learning using POGIL

Sample

Sample of this research was students of class XI of SMA Malang which amounted to 85 students come from three classes and chosen by convenience sampling technique. They were between 16-17 years old and were majoring in science. The three groups were then determined as experimental group I (28 students), experimental group II (29 students) and control group (28 students).

Research Procedure

The data collection procedure consisted of two stages: the preparation step and the implementation step. At the preparatory step of the research, the researchers prepared the instrument of treatment in the form of syllabus, lesson plans and students worksheets. Then the researchers asked permission at BAKESBANGPOL (National Unity and Politics Board), the local Education Agency and the school involved as the research place. Each experiment group and control group was taught with the same content of chemical solution (salt hydrolysis and buffer solution) and the same learning duration (12 meeting hours @ 45 minutes). After the learning is completed, students filled out the WIHIC questionnaire as a posttest. Implementation step of POGIL enriched by SSI in the experiment class were as follows:

Table 2 Steps of POGIL enriched by SSI in the topic of Hydrolisis

Step		Description
1	Orientation	-Teachers introduce aspects of nature of science -Teacher asks students to observe pictures of various salts given in the worksheet -Students write and formulate inferences based on information provided by teachers -Teacher directs students to make inquiries to make investigation -The teacher determines the question to be investigated further
2	Exploration	- Students perform inquiry activities in the form of: observing the three saline solution images in the worksheets, identifying the similarities of the those solutions and writing down the reaction that occurs when the salt is dissolved in water. -Teacher emphasized the nature of science.
3	Concept Formation	-The teacher asks the students to discuss the exploration results -Students report the results of group discussions in front of the class about the nature of the saline solution - The teacher guides the students with inquiry questions - Teachers help students to build concepts and make conclusions.
4	Application concept through SSI case	- Students are given SSI problems related to the nature of the saline solution to be solved, i.e the impact of MSG on health. - Students analyze SSI issues provided through group discussions - Student present the results of the discussion
5	Closure	-Students summarize the nature of the derived salt solution from weak acids and strong bases. -Students reflect on the learning experience gained

Instrument

The research instrument consisted of treatment and measurement instruments. The treatment instruments were syllabus, lesson plan and students worksheet. This instrument was validated by two chemistry education lecturers. While the measurement instrument is a WIHIC questionnaire developed by Fraser, et al. (1996). This instrument was chosen because it was suitable for measuring the learning environment and has been successfully used in various countries such as Brunei, Canada, Korea, India, Singapore, USA, Taiwan and Indonesia (Aldridge et al., 2009). Beside that it also has been used in different subjects and level such as research of Allen & Fraser (2007) on primary student in science subject and Ogbuehi & Fraser (2007) on middle student in mathematic subject. The instrument consisted of 50 items of questions translated by the researcher into Indonesian and validated by two chemistry lecturers who understood the content and had the proficiency in English. The WIHIC instrument uses a Likert scale of 1-5 with criteria: always (5), often (4), sometimes (3), rarely (2) and never (1). There are seven aspects measured on the instrument such as students' cohesiveness; (2) teacher's support; (3) involvement; (4) investigation; (5) task orientation; (6) cooperation; and (7) equity. The reliability of WIHIC questionnaire calculated using Cronbach Alpha was 0.943. This value indicated that the WIHIC questionnaire had a very high reliability.

Data Analysis

The questionnaire scores in all three classes were tested for normality and homogeneity as prerequisite analysis test. Then, the data were analyzed by one-way ANOVA technique (one way ANOVA) followed by Post-Hoc LSD advanced test by using IBM SPSS 21.0 program at 95% confidence level (= 0,05) if the prerequisite test result were met. Meanwhile, if the prerequisite test was not met then the data is analyzed using nonparametric statistic Kruskall-Wallis H Test followed by Mann-Whitney test by using IBM SPSS 21.0 program at 95% confidence level (= 0,05). The test was conducted to find out whether there wasa difference of perception of

learning between students who were studied with the POGIL model with SSI context, POGIL and conventional models. As in the previous explanation that this questionnaire has seven aspects that are measured. The analysis for each aspect is measured by using effect size to find out the effect of the instructional model in each aspect. For 3 sample groups, the measurement of effect size was determined based on the calculated eta square value using the SPSS 21.0 for Windows program. The value of the effect size is then defined according to the range in the following table:

Table 3 Effect size

Value (eta^2)	Effect Criteria
$eta^2 \geq 0.14$	Large
$0.06 \leq eta^2 < 0.14$	Medium
$0.01 \leq eta^2 < 0.06$	Small

Result & Discussion

The data collected from the WIHIC questionnaire was analyzed for normality and homogeneity to determine the statistical methods used. The results of normality and homogeneity test are as follows.

Table 4 Result of normality and homogeneity test.

Group	Number of Student	Mean	Deviation Standard	Normality *Sig. (2-tailed)*	*Levene's test*
Control	28	3.57	0.449	0.175	0.111
Experiment I	29	3.98	0.344	0.098	
Experiment II	28	4.08	0.371	0.200	

Based on Table 4 it was known that the average experiment class was higher than the control class, the data was normally distributed and homogeneous. Normality and homogeneity of data was indicated by significance value> 0.05. These results indicated that the prerequisite analysis test has been met, so the next analysis used parametric statistics. To test the hypothesis on students' perceptions of their learning environment, the average score was tested using one-way ANOVA test. ANOVA test results obtained significance value of 0.000 (sig. <0.05). This means that in the three groups there were significant differences in student perceptions about the learning environment. This difference of perception showed that the learning model of POGIL with SSI was able to provide a positive learning environment for students. The positive difference was indicated by higher average score (see Table 4) compared to other classes. A positive learning environment in the classroom was crucial for meaningful learning to materialize (Ozerem & Akkoyunlu, 2015). ANOVA test results continued with Post Hoc LSD test to know specifically the aspects of WIHIC where learning POGIL contextualized by SSI gave a significant difference in the perception of learning environment in students. The Post Hoc test results were presented in Table 5.

Table 5 Post Hoc LSD Test Result

Group (I)	Group(J)	Mean Difference (I-J)	*Sig. (2-tailed)*
Control	Experiment I	-0.507	0.000
	Experiment II	-0.406	0.000
Experiment I	Experiment II	0.101	0.333

Table 5 showed that there were significant differences of students' perceptions between students who were studied using POGIL with SSI, POGIL, and conventional models (Sig. <0.05), but did not show significant differences in student perception among students who studied using the POGIL with SSI model and the POGIL model (sig.> 0.05). The differences in the three groups were caused by different learning approaches. Different learning approaches would impact on different learning environments. This was because each learning approach had its own characteristics that wiwould be implemented in the stages of learning. The inquiry approach with the POGIL model in research groups I and II was process-oriented, thus encouraging the opportunity for students to be actively involved in learning (Hanson, 2006) than the control class, where students were only passive in the classroom. In addition, learning activities at POGIL use learning groups whereas conventional approaches do not.

Students who were studying in non-group or individually with a competitive environment would not experience intellectual challenges. The intellectual challenge of students in group learning occured when their theories and their perceptions were different, leading to disagreement. This disagreement encouraged them to actively seek information, think critically and tried to solve the problem given until they finally restructured their knowledge (Hanson, 2006). Active involvement of students in the classroom would improve students' motivation in learning (Liu *et al.*, 2001) and their attitudes toward learning (Martin-Dunlop, 2012) so that their perceptions of the learning environment would be different. This was also reinforced by Lea *et al.* (2003) which stated that students believed the student-centered learning environment motivated them more.

Statistically, learning POGIL and POGIL berkonteks SSI did not show differences in student perception significantly. This is because in learning POGIL berkonteks SSI and POGIL students are both guided to actively involved in the group to be able to construct their own knowledge through group discussion. Most student activities in the class are the same, only a few different ones, namely the use of socioscientific issues (SSI) and contextual issues at the application stage in POGIL learning. At this stage students are given other problems to apply the concept they have gained. Students in both classes are likely to feel the same that both get challenges, although the nature of the problem is different. The same is also expressed by Eastwood *et al.* (2013) that although SSI is given explicitly on learning and is connected to science, this SSI is only part of the whole process of inquiry.

Although statistically did not show differences in students' perceptions between groups that were studied with the POGIL model with SSI context and POGIL, the mean score of students' perceptions in group I was higher than group II. This suggested that students who were taught by POGIL contextualized SSI experienced a different but insignificant learning environment than students who are taught by POGIL learning alone. This is possible because SSI as a context in the lesson enables students to actively engage in discussion activities. Students tended to be more motivated because the issues discussed related to the everyday life they had encountered in their environment (Feiranbend & Eilks, 2010). This is reinforced by Rahayu (2016) stating that through relevant and familiar cases for students would assist students in visualizing abstract concepts to become more concrete and students could apply the knowledge they understood in the SSI debate.

In order to know the effect of learning POGIL with SSI context to the aspects of WIHIC in students, the score of student's responses grouped per aspect of WIHIC then tested the reliability and calculated effect sizenya. Below was the recapitulation of the relative results and the effect of the WIHIC students' score.

Table 6 Effect size and Reliability for each Aspect of WIHIC

Aspect	Effect value (eta^2)	Criteria	Significance	Criteria	Reliability	Criteria
Student Cohesiveness	0.059	Small	0.083	Not significance	0.751	High
Teacher Support	0.353	Large	0.000	significance	0.796	High
Involvement	0.218	Large	0.000	Significance	0.765	High
Investigation	0.226	Large	0.000	Significance	0.787	High
Task Orientation	0.099	Medium	0.014	Significance	0.755	High
Cooperation	0.044	Small	0.157	Not significance	0.778	High
Equity	0.148	Large	0.001	significance	0.749	High

Based on the data in table 6 above, the high reliability value in each aspect of WIHIC shows that this instrument is really capable of measuring what will be measured (Cresswel, 2012). POGIL with SSI has a large and significant influence on the aspects of teacher support, involvement, investigation and equity. There are several things that may cause this effect.

In the teacher support and equity aspect, the teacher acts as a facilitator in the learning that guides and directs the students to get the concept and each student is given equal opportunity to express his/her idea regardless of gender. In the involvement aspect, the use of study groups on the POGIL model with SSI context, could enable positive student interaction. Some research results also show that within the group, students can learn more, understand more or memorize more. Plus, they also feel better about themselves, their class and friends (Hanson, 2006). In addition to study groups, providing SSI at the application stage can create an SSI atmosphere where students integrate and apply basic scientific literacy such as being able to read science texts in various representational modes and have knowledge about science content (Norris and Phillips, 2003). The environment or atmosphere makes the students involved in negotiating their ideas to reach agreement as they discuss through the application of their understanding of existing science issues or topics (Nam & Chen, 2017). The understanding in question is their understanding of what is considered to be good evidence and what is considered a good claim in this kind of environment for discussion (Duschl, 2008; Ryu & Sandoval, 2012). In the investigation aspect, the use of SSI as an application stage in learning can increase students' curiosity, because the SSI problem presented by teachers is a rare fact/phenomena that they rarely know. Curiosity is very important in learning because students' curiosity is the basis of scientific discoveries (Rahayu, 2007). This curiosity will encourage/motivate students to engage in learning including investigative activities to find solutions to SSI problems (Pluck & Johnson, 2011). In addition to curiosity, the motivation also arises because the use of SSI that can improve the significance of the learning they get because the content of the material they are learning is relevant to solve the problems that exist around them (Fletcher 2003; McRobbie & Tobin, 1997).

In the aspect of task orientation, POGIL with SSI gives a moderate but significant influence. This can be explained because in the learning process, the teacher explicitly explains that there is a division of student tasks in the group, i.e the manager (ensuring all members are involved in problem solving and tasks completed on time), reflectors (commentators commenting on group dynamics), recorders (noting the group members' names at the beginning of the discussion and recording the results of the discussion) and the presenter (delivering the results of the discussion verbally to teachers and other friends) (Hale & Mullen, 2009). This division is intended for the effort of obtaining concepts and solving problems of SSI can be effective (Trevathan & Myers, 2013). In addition, the tasks in the form of SSI questions that they get require different ways of completion, compared to students who only get POGIL or conventional learning. Due to solving SSI problems, students are required to think critically about the issue with those with different views (Simmoneaux, 2008)

While on the aspect of cooperation and student cohesiveness, POGIL with SSI gives little influence and not significant. The insignificant results on the cooperation aspect mean that students in the three groups may work

together both in groups and outside the group. This is possible because the activities covered in these two aspects can be realized in both control and experiment groups. For example, in a control class, although teacher-centered learning, students can interact with their peers to ask questions or discuss issues they encounter during learning. Research conducted by Aldridge & Fraser (1999) also showed that student cohesiveness aspects in students in two different countries, did not differ significantly.

Conclusion

Students' perceptions of their learning environment in the three classes showed significant differences. POGIL instruction both SSI-contextualized and non SSI-contextualized has a significant effect on students' perceptions of their learning environment towards students in the conventional class. However, the POGIL instructin with SSI did not have a significant effect on students' perceptions of their learning environment on POGIL only instruction. Among the seven aspects found in WIHIC, POGIL instruction with SSI gives a big and significant influence on the aspects of teacher support, equity, involvement and investigation. As for the aspect of task orientation, POGIL with SSI contexts provide a moderate but significant, while the aspect of cooperation and student cohesiveness showed little effect and not significant.

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THE USE OF LINEAR ALGEBRA AND ALGEBRA STRUCTURE TEACHING MATERIALS BASED CONCEPT MAPS TO OVERCOME STUDENTS' DIFFICULTIES IN MATHEMATICAL PROOF

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Abstract: This study aims to design the Linear Algebra and Algebra Structure teaching materials based concept maps to overcome students' difficulties in mathematical proof. The method used was research and development, Four-D model (Define, Design, Develop, Disseminate). The subjects of the study were students of Mathematics Education, UIN Sunan Gunung Djati Bandung-Indonesia. Define stage was addressed to analyse the problems faced by students, especially in mathematical proof. In design stage, prototype of teaching materials based concept maps was designed. Develop stage was the stage of making teaching materials draft which was further validated by the expert. Based on the validation of the experts in term of content properness got 80,56%, presentation properness got 71,67%, language properness got 80,00%, and graphic properness got 73,90%. Therefore the average result is 76,53.% with very appropriate criterion, so that the draft is ready for a limited and classical test. The limited and classical test showed that the concept map can aid students in the process of proofing, the result of the test at the end of the meeting shows that 75% of students got a score higher than 70, this means that has achieved mastery learning in classical. Furthermore, the disseminate stage was the stage of spreading the revised teaching materials product. The result of the study concludes that the Linear Algebra and Algebra Structure teaching materials based concept maps have met the standard, hence it is effective to assist students in overcoming their difficulties in mathematical proof.

Keywords: Four-D Model, Linear Algebra and Algebra Structures teaching materials, Concept maps

Introduction

The proof ability is one of the five standard mathematical learning processes recommended by the National Council of Teachers of Mathematics (2000). Mathematics as a deductive science requires a method of truth-seeking process; this method is known as a mathematical proof method. The method of proof is necessary to convince the truth of statements or theorems that are generally in the form of implications or biimplications

In mathematics, the proof is a series of logical arguments that explain the truth of a statement (Hernadi, 2008: 1). Required abilities in mathematical proof according to Selden & Selden (Tall, 1999: 30) are the ability to construct evidence and the ability to validate evidence. Mathematical proof can serve as an actual process through the construction of evidence and as the final phase. As Hadamard (Tall, 1999: 32) points out that mathematical proof is the final phase in mathematical thinking. Based on the opinions of the experts above, mathematical proof is a logical way of thinking that starts from axioms or definitions and moves forward through logical steps to a conclusion.

Some subjects that require the ability in proofing process are Linear Algebra and Algebra Structure. Based on the experience when researchers teaching Linear Algebra and Algebra Structure, it shows that the weakness of the students' ability is in proofing process. These weaknesses include the difficulty of students in understanding

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the definitions, the theorems that support the proof, linking between concepts that support the proof, and difficulty in giving arguments to obtain conclusions.

Study on student difficulties in mathematical proof done by some experts. Recio & Godino (2001) found that students are weak in producing evidence deductively, Weber (2001), found that lack of strategic knowledge, was the cause of early student difficulties in mathematical proof, and Selden & Selden's (Weber, 2003) found that students could not determine whether or not a proof is valid.

Grob, et al (2008) argues that many students face serious difficulties with consistent reasoning and argument, especially on mathematical proof. Furthermore, Moore (Knapp, 2006) finds seven student difficulties in proofing: 1) students do not understand the definition, it means that they cannot state a definition of a concept in their own way, 2) the students have little intuitive understanding of concepts, 3) students' image concepts are inadequate to help proofing, 4) students are unable to produce and use their own example, 5) students do not know how to use definitions to construct evidence, 6) students cannot understand and use mathematics and notation, 7) students do not know how to start evidence.

In accordance to that, it is necessary to make efforts from teacher to overcome student difficulties in mathematical proofing especially on the Linear Algebra and Algebra Structure subjects. Students need to be equipped with various sources of learning in achieving good results. One of the learning resources that need to be developed is teaching materials that can develop students' logical thinking, so that mathematical concepts are easy to understand by students

Teaching materials are any forms of materials that can be used to assist teachers in carrying out teaching and learning activities in the classroom. The intended teaching materials can be either written or unwritten (National Centre for Competency Based Training, 2007). Teaching materials provide information or a relatively operational picture for the management of the learning process. The other experts say that teaching materials is a set of materials that are arranged systematically, both written and unwritten, so as to create an environment or atmosphere that allows students to learn. Based on these definitions, it can be concluded that teaching materials is a learning component used by teachers as learning materials for students and assist teachers in carrying out teaching and learning activities in the classroom. Teaching materials can support student learning and improve student success. Of course, teaching materials should be in accordance with the content that students and teachers will use.

Interrelation of concepts should be presented clearly within teaching materials in order to facilitate students in constructing the evidence for proofing purposes which is in accordance with mathematic characteristics that has an interrelated concept. The interrelation between concepts can be delivered through concept maps integrated in teaching materials. This form of concept might help students in identifying key ideas related between topics and rearranging them into a logical pattern. Concept maps can accurately depict all the key concepts and principles that exist within the curriculum and the relation between the concepts and principles. In teacher’s perspective, concept mapping serves benefit as aids in preparing the lesson. In student’s perspective, concept map helps them in gaining deep understanding

The use of concept map as a teaching strategy was first developed by J. D. Novak of Cornell University in the early 1980's. It was derived from Ausubel's learning theory which places central emphasis on the influence of students' prior knowledge on subsequent meaningful learning. A concept maps is a diagram showing the relationships among concepts. They are graphical tools for organizing and representing knowledge. (Iona, et al, 2010:568)

Novak & Canas (Radix & Abdool, 2013) state that concept maps are hierarchical in graphical structures including nodes expressing concepts, and connecting arrows labeled with relationships between concepts.

Graphic organisers are tools and techniques that allow the user to visually depict the organisation of information.

The concept maps will serve as an aid for students in connecting any related concepts, as showed in Cardemone, Minemier and Fuata'i (Novak and Ca˜nas ,2009:7) research, key ideas in learning mathematics can be represented by using concept map. In its application, concept maps help teachers in designing topics sequentially and help students to see the relationships between them. Students can create a concept maps from the topics that they have learned. Moreover, students not only show a better performance in problem-solving tests but also gain confidence in their ability in solving mathematics tasks. The use of concept maps through Vee graph with Form Five students in Western Samoa found that students became more autonomous in learning and better at solving problems than students who did not use concept maps.

This study aims to produce the Algebra Linear and Algebra Structure teaching materials based concept maps as an effort to overcome student difficulties in mathematical proof and examine the effectiveness of the teaching materials.

Research Method

This study is a development research with Four-D model (Define, Design, Develop and, Disseminate) suggested by oleh Sivasailam Thiagarajan, Dorothy S. Semmel, dan Melvyn I. Semmel (1974). The sample study was taken based on purposive sampling. The sample was students of Mathematics Education, Faculty of Education and Teacher Training, UIN Sunan Gunung Djati Bandung Indonesia, 3rd and 5th semesters of 2017/2018 academic year taking Linear Algebra and Algebra Structure subjects.

Teaching Materials Development Procedures

Teaching materials development procedures were based on development model which is 4-D model (Define, Design, Development, Disseminate).

Define Stage

At this stage, an assessment of standard competence and basic competence that will be achieved from the Algebra Linear and Algebra Structure subjects was carried out. Assessment was also addressed on the concepts and learning theory for Linear Algebra and Algebra Structure subjects.

Design Stage

At this stage, prototyping or modeling a teaching materials was undertaken. There are three methods that can be taken into account in arranging teaching materials design (Tiarani, 2011), namely (1) start from scratch (2) information repackaging or text transformation), and (3) compilation or wrap around text). At this point of stage, teaching materials, number of chapters / material, organization of the teaching materials, number of meeting required or school hours was also drafted in the book.

This study used compilation or wrap around text due to the low economic cost and less time needed. Teachers should collect textbooks by browsing literature in libraries, selecting material in bookstores, and actual information in newspapers, magazines, journals and others (Ekawarna, 2007: 43).

Furthermore, materials needed are collected, copied, and then selected and arranged according to standard competence and the subjects order in syllabus and Linear Algebra and Algebra Structure subject. In addition, the teaching materials was also equipped with concept maps. Summary and simplification of topics were delivered in graphical representation which aims to ease students in understanding and recalling the topic. The steps of making concept maps are sorting, constructing concepts start from the most inclusive concept to the least

inclusive concept, connecting the concepts associated with the linking lines, and then adding linking words on each of the linking lines. Here is one example of Linear Algebra's concept map of "Linear Independence" material.

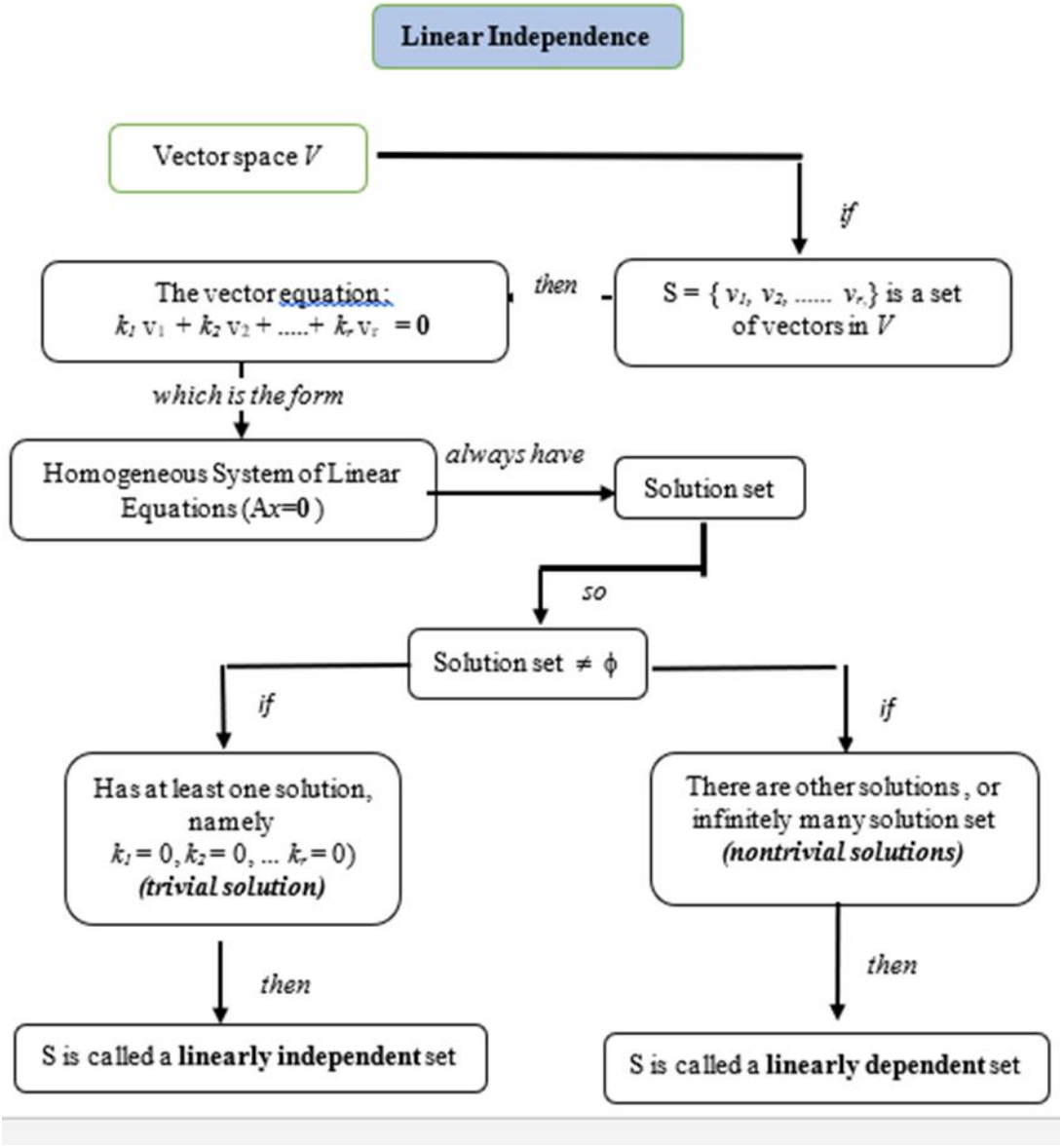

Figure 1. Concept Maps of Linear Independence Material

While on the Algebra Structure is the material "Group "as shown below

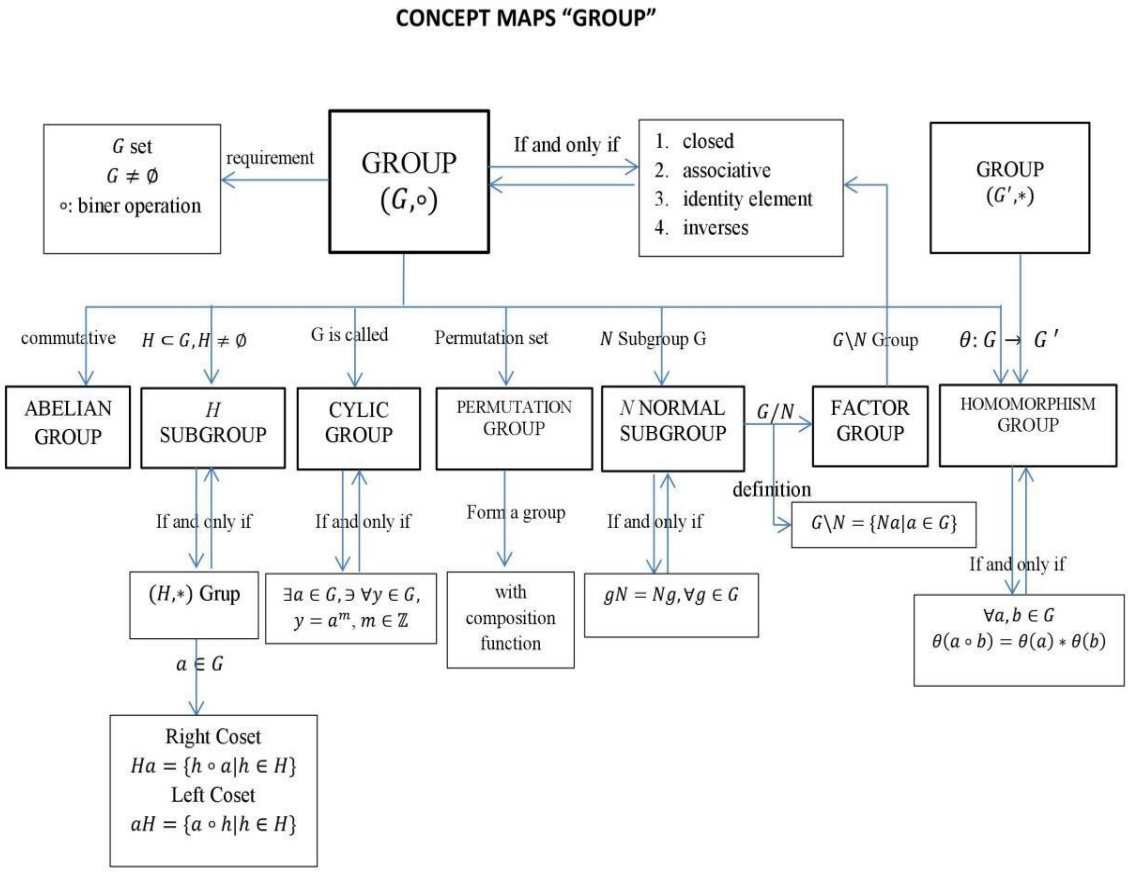

Figure 2. Concept Maps of Group Material

Develop Stage

At this stage, a draft of teaching materials was made which further submitted to the experts to be reviewed. The draft will be judged in terms of content properness, presentation properness, language properness, and graphic properness. The criteria of properness of teaching materials can be seen in Table 1

Table 1 Properness Conversion Criteria

Percentage (%)	Qualification	Decision
90-100	Very Good	Products ready to be utilized in real field for learning activities not revisions
80-90	Good	The product is ready to be utilized in real field for learning activities without evision
70-79	Pretty good	The product can be continued by adding some parts that are lacking, doing certain considerations, the addition is not too large and not fundamental
60-69	Not Good	Revise by thoroughly re-examining and looking for product flaws to improve
0-59	Not very good	The product failed, revised large and basic about the content of the product

Sudjana (2005)

Furthermore, a test on designed teaching materials was conducted on a limited basis. After the limited test had conducted, the teaching materials were revised for further taken into classical test through real learning implementation stage by using concept-based teaching materials.

Disseminate Stage

At this stage, the reviewed teaching materials was implemented in the teaching and learning process. This stage is the last stage of development to promote teaching materials to be used by either individual, group, system, or program.

Research Findings

Based on expert validation at the develop stage of teaching materials obtained results as follows

Table 2 Validation Results on the Content Properness Aspect

	Teaching Materials	
Content Properness	**Linear Algebra**	**Algebra Structure**
The truth of material content	4,33	4,33
Material accuracy	4,00	3,67
Material coverage	4,00	4,00
Clarity of concept maps	4,00	4,00
Grouping materials	4,00	4,00
Compatibility with the syllabus	4,00	4,00
Total Score	24,33	24,00
Average Score	4,06	4,00
Prescentage	81,11%	80,00%
Average	80,56%	

Maximum Score =5

In Table 2. obtained by validation percentage of Linear Algebra and Algebra Structure based concept maps got 80,56% is in good qualification (80-89) so that the content properness aspect of product is declared viable without revision.

Table 3 Validation Results on the Presentation Properness Aspect

	Teaching Materials	
Presentation Properness	**Linear Algebra**	**Algebra Structure**
Clarity of indicators to be achieved	3,33	3,33
Clarity of material distribution	3,67	3,67
Giving stimulus and response for students	3,33	3,67
The information is complete	4,00	4,00
Ordered material presentation	3,67	3,67
Motivate students and have appeal	3,33	3,33
Total Score	21,33	21,67
Average Score	3,56	3,61
Prescentage	71,11	72,22
Average	71,67	

Maximum Score =5

In Table 3 obtained by validation percentage of Linear Algebra and Algebra Structure based concept maps got 71,67% is in pretty good qualification (70-79) so that the presentation properness aspect of product is declared viable but there are some revisions to the two teaching materials, namely clarity of indicators to be achieved. giving stimulus and response for students and motivate students and have appeal.

Table 4 Validation Results on the Language Properness Aspect

	Teaching Materials	
Language Properness	**Linear Algebra**	**Algebra Structure**
The truth of grammar	3,67	4,00
Clarity of information	4,00	3,67
Using good language rules and right	4,00	4,33
Using effective and efficient language (clear and concise)	4,33	4,00
Conformity of sentences with the level of student development	4,33	4,00
The simplicity of sentence structure	3,67	3,67
The communicative nature of the language used	4,33	3,67
Total Score	24,67	23,33
Average Score	4,11	3,89
Precentage	82,22	77,78
Average	80,00	

Maximum Score =5

In Table 4. obtained by validation percentage of Linear Algebra and Algebra Structure based concept maps got 80,00% is in good qualification (80%-89%) so that the language properness. aspect of product is declared viable without revision.

Table 5.Validation Results on the Graphic Properness Aspect

	Teaching Materials	
Graphic Properness	**Linear Algebra**	**Algebra Structure**
Clear number system	3,67	4,00
Space organization/layout	3,00	4,00
Accuracy in paragraph arrangement	3,33	3,67
Clear writing or typewriting	3,67	4,00
Appropirate type and size of font	4,00	3,33
Physical size of the teaching materials with the student	3,67	4,00
Total Score	21,34	23,00
Average Score	3,56	3,83
Precentage	71,13	76,67
Average	73,90	

Maximum Score =5

In Table 5. obtained by validation percentage of Linear Algebra and Algebra Structure based concept maps got 73,90% is in pretty good qualification (70% -79%) so that the Graphic Properness aspect of product is declared viable but there are some revisions to the two teaching materials, namely accuracy in paragraph arrangement

Based on the results of the calculation of properness in terms of content, presentation, language, and graphic then the average properness of teaching materials as a whole can be seen in Table 6.

Table 6. Properness of Material Teaching

Properness Aspect	**Percentage**
Content Properness	80,56
Presentation Properness	71,67
Language properness	80,00
Graphic Properness	73,90
Average	76,53

In Table 6, the average of the properness of teaching materials is 76,53 including good enough category (70% - 79%). After the draft of the teaching materials was revised based on expert input, limited test was conducted on some students. Based on the limited test, the result shows that the students find the teaching materials based concept maps to be very helpful, especially in terms of mathematical proof. In addition, the product is ready to be utilized in the real situation (classical test) for learning activity without revision. This activity is real learning situation where teaching materials based concept maps are used.

At the last meeting of the classical test, students were given a test containing the problem of mathematical proof with results 75% of students got a score higher than 70. This means that has achieved mastery learning in classical. Furthermore, the teaching materials were taken to disseminate stage as the final stage of material development where the teaching materials were used outside the research subject.

Conclusion

Based on the result of development and the test on teaching materials (limited test and classical test) on the students of Mathematics Eductaion UIN Sunan Gunung Djati Bandung, Indonesia it can be concluded that teaching materials of Linear Algebra and Algebra Structure based concept maps using Four-D model have met the standards to be used in learning process,

The properness result of the teaching materials which is used is gained from the expert in term of content properness got 80,56%, presentation properness got 71,67%, language properness got 80,00%, and graphic properness got 73,90%. Therefore the average result is 76,53.% with very appropriate criterion.

Based on the criteria of classical mastery learning, class using Linear Algebra and Algebra Structure is said to be complete, this is obtained from the average value of students, i.e 75% of the number of students got a score above 70. So, that Algebra Linear and Algebra Structures teaching materials based concept maps can be effectively used to overcome student difficulties in mathematical proof.

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THE ABILITY OF (LINGUISTIC AND MATHEMATICAL) MULTIPLE INTELLIGENCE IN PREDICTING THE ACHIEVEMENT OF HIGHER PRIMARY STAGE STUDENTS IN JORDAN IN THE COURSES OF ARABIC AND MATH

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Abstract: The study aimed to detect the ability of (linguistic and mathematical) multiple intelligence in predicting the achievement of higher primary stage students in Jordan. A random sample of 120 students has been selected. In order to achieve the study's objectives, the researcher adopted the (linguistic and mathematical) multiple intelligence measure, which was developed by (Al Massarwah, 2015). The measure was applied to the main sample, after verifying its validity and reliability. The results showed that (linguistic and mathematical) multiple intelligence of the higher primary stage students was high. Finally, the study concluded some predictive regression equations of student achievement in the courses of Arabic and Mathematics. According to the study's results, some recommendations have been made.

Keywords: Multiple Intelligence, Achievement, Higher Primary Stage

Introduction

Intelligence is considered as one of the most popular terms in the field of psychology. It is also one of the most related terms to achievement and success. The term "intelligence" has attracted the attention of many scientists and ancient philosophers. It is noticed through their writings about the nature of individual's knowledge and education.

Psychologists have shown interest in studying intelligence because it is vitally linked to all various aspects of life. There is a wide agreement among psychologists on the vitality and significance of this subject, but there is a great controversy among them about the nature of intelligence and its definition.

Psychologists have differed in their perceptions of intelligence. Thus, there are multiple definitions and theories of it. It may be attributed to the ambiguity of the concept of "intelligence" and to the difficulty of accurately identifying it, since it is a characteristic and not a state of being. Intelligence theories, developed by Gardner, are the most important theories that attempted to provide scientific, logical and systematic interpretations of mental activity, concerning its constituents, limitations, and elements (Afanah & Al Khazendar, 2007).

As for Spearman's theory, it is one of the early classical theories that deal with the concept of intelligence. It suggests that mental activity consists of two factors (general and private). Then, the Multi-Factor theory emerged, as developed by Thorndike. It has explained the process of analyzing general factors into primary factors, such as: Mechanical intelligence, abstract intelligence, and social intelligence.

In 1983, Thurston concluded, through factor analysis, that there are seven primary mental capacities. Then, in 1940, Cattal came up with the idea that there are two factors of intelligence: Fluid and Crystallized Intelligence (Cohen & Swerdlik, 1999).

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There is variation in defining and measuring intelligence, due to the multiple theories that aimed to interpret the concept of intelligence. The American Psychological Association (APA) issued a comprehensive definition of the concept of intelligence. It has been defined as a concept that clarifies and organizes the variation in people capacities in understanding complicated thoughts, learning through experience, coping with environment effectively and solving problems. In addition, the capacity of the same individual differs from one situation to another.

> The American Psychological Association (APA) defined intelligence as, "Individuals differ from one another in their ability to understand complex ideas, to adapt effectively to the environment, to learn from experience, to engage in various forms of reasoning, to overcome obstacles by taking thought. Although these individual differences can be substantial, they are never entirely consistent: a given person's intellectual performance will vary on different occasions, in different domains, as judged by different criteria" (Neisser et al., 1996).

In 1983, Gardner developed the theory of multiple intelligence in his well-known book, *Frames of Mind*. He identified seven factors of intelligence: Linguistic, mathematical, spatial, kinesthetic, musical, social and personal intelligence. In 1995, Gardner added a new factor which is natural intelligence.

The theory of multiple intelligence has a great significance in the field of education. It has explored matters and aspects that have been overlooked by other theories. For instance, while these theories depend on individual assessment and intelligence tests, the theory of multiple intelligence helps identify individual capacities and differences and guide individuals towards the jobs that suit their capacities. The educational significance of this theory is that it helps provide contributions and suggestions that are great for the field of education. It is also useful for teachers who need to improve their knowledge about teaching strategies and tools that exceed their linguistic and logical capacities. These linguistic and logical capacities can be effectively exploited and utilized in classrooms (Jaber, 2003).

The educational impact of applying the theory of multiple intelligence in classrooms can be seen in many advantages, such as improving the capabilities of taking responsibility, self-directedness, independence, acquiring new skills, improving self-learning skills, and significantly solving the problems of the school system.

Linguistic intelligence is one of the essential constituents of Gardner's theory of multiple intelligence. According to Gardner, linguistic intelligence can be identified among individuals through clear indicators. These indicators include the ability to memorize quickly, desire to speak, desire to listen to CDs, having interest in linguistic games, showing a growing linguistic balance, and having interest in reading stories. In addition, logical intelligence is perceived as the model father of intelligence. It can be identified among individuals through the abilities of classifying, collecting, designing, noticing the relationship between things, doing mathematical operations, and using abstract concepts.

Literature Review

There are many studies that have tackled the subject of the current study. (Snyder, 2000) aimed at identifying the relationship between multiple intelligence and academic achievement. The sample of his study consisted of (128) female and male students in senior grade levels in Britain. The list of multiple intelligence was applied to the participants. It concluded a positive correlation that has a statistical significance between multiple intelligence and academic achievement.

(Chan, 2001) aimed at identifying the predictive abilities of natural intelligence in divergent thinking and achievement. The study's instruments were applied to a sample consisted of (192) female and male students. The study concluded that it is impossible to predict academic achievement in the courses of English language

and math through multiple intelligence. The study also concluded that it is possible to predict the academic achievement in the course of Chinese language through multiple intelligence.

Fotini (2001) aimed at using the learning strategies that are based on the theory of multiple intelligence to reduce students' anxiety towards the math course. The sample of the study consisted of (17) female and male students. The study's results showed that there was an improvement in the performance of the sample in the math course. It also concluded that there was an increase in the sample's motivation and enthusiasm to learn.

Pajkos & Klein (2001) aimed at increasing the mathematical achievement of students through adopting an integral and cultural curriculum. The study's results showed an increase in the students' academic achievement, motivation level and attitudes towards math. (McMahon & Rose, 2004) aimed at investigating the relationship between multiple intelligence and achievement in reading. The sample of the study consisted of (288) fourth grade students. The list of (Teele Inventory of Multiple Intelligence) was applied to the participants. The study concluded that it is possible to predict the academic achievement in writing through linguistic intelligence.

Mohammad (2006) conducted a study, under the title, "Effectiveness of a suggested program in the light of multiple intelligence theory in developing the ability of self-expressive writing among 12th grade students". The sample of the study consisted of (25) students who suffered from writing difficulties. The study concluded that the suggested program is effective in improving the skill of writing among the participants.

Adawi (2008) aimed at identifying the impact of applying an educational portfolio list based on multiple intelligence on the achievement of fifth grade students in Arabic course. The study's sample consisted of (120) female and male students. The study's results showed that there are statistically significant differences between the study's two groups in students' academic achievements.

Statement of the problem

The study problem arises from tracking the educational reality of Jordan, and from the decline in the learning outcomes, especially in Arabic and math. There are individual differences among students' mental capacities due to differences in their psychological, mental, social, emotional, and kinetics characteristics. These individual differences are attributed to the variation in the levels of (linguistic and mathematical) multiple intelligence of higher primary stage students in the educational directorate of Al-Shobak district. In addition, most studies, theories, and opinions concerned with intelligence have pointed out the strong relationship between intelligence and academic achievement. Thus, the current study aimed at identifying the relationship between (linguistic and mathematical) multiple intelligence and academic achievement in the courses of Arabic and math.

The current study aimed at identifying the relationship between (linguistic and mathematical) multiple intelligence and academic achievement, especially the kinds of multiple intelligence that are more capable of predicting the academic achievement in the courses of math and Arabic. It is conducted due to the scarcity of Arabic studies in this field. The study problem can be seen through the following questions:

1. What is the extent of higher primary stage students' possession of (linguistic and mathematical) multiple intelligence in the schools of Al-Shobak district?
2. What are the abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the Arabic course?
3. What are the abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the math course?

Objectives

The study aimed at identifying the following:

1.The degree of (linguistic and mathematical) multiple intelligence among higher primary stage students in the schools of Al-Shobak district.

2.The abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the Arabic course.

3.The abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the math course.

Significance

The significance of this study arises from its consistency with the modern expectations in educational environments which aim at increasing attention to the outcomes of education. It aims at identifying the degree of (linguistic and mathematical) multiple intelligence among higher primary stage students in the courses of Arabic and math. Thus, it helps investigate the difficulties that face students in their academic life. It represents a contribution to the literature of multiple intelligence. It helps identify the relationship between multiple intelligence and academic achievement in the course of Arabic and math. Educators, educational advisors, parents, and others may benefit from the results of the current study. It helps them give attention to the variables that have the strongest relationship with students' academic achievement.

Terminology

Multiple intelligence: Gardner (1983) has defined multiple intelligence as a group of skills that help the individual solve essential problems in life, capacity to create effective results or create a service that has value in a certain culture. These skills include the capacity to differentiate or create problems which require new knowledge. He also believes that multiple intelligence is a complicated structure consisting of a great number of separate capacities that are relatively independent. Each capacity represents a kind of intelligence, and each one is peculiar to a certain area in the brain.

> Gardner has defined multiple intelligence as "the capacity to solve problems or to fashion products that are valued in one or more cultural settings and detailed a set of criteria for what counts as a human intelligence" (Gardner & Hatch, 1989). Capacities such as writing a symphony, execute a painting, stage a play, build up and manage an organization, carry out an experiment are perceived as human intelligence. People exhibit various types of intelligence which differ from one person to another based on heredity and environment factors. Gardner has developed a list that includes seven different types of intelligence: logical-mathematical, linguistic, musical, spatial, bodily-kinesthetic, interpersonal, and intrapersonal.

Linguistic (verbal) intelligence: It is the capacity to use words efficiently and the ability to process the linguistic structure. It also includes the capacity to arrange words and understand their meanings (Gardner, 1983).

Mathematical (logical) intelligence: It is the capacity to use numbers efficiently. It also includes the ability to solve problems and think logically. It also includes sensitivity to models and to logical and virtual relationships (Gardner, 1983).

Achievement: It is the score students get in schools exams written in the marks record in the course of Arabic and math.

Higher primary stage: It is the stage that includes the following grades: (seventh, eighth, ninth, and tenth).

Methodology

This study has adopted the descriptive analysis approach in order to fulfill its objectives. The study was conducted through using the (linguistic and mathematical) multiple intelligence measurement to collect the required data. The data was collected through applying this measurement on a random sample that represents the study's original population.

Population and sampling

The population of the study consisted of higher primary stage students in the schools of Al-Shobak district. The population consisted of 944 male and female students. The study's instrument was applied to a random sample. The sample consisted of 120 male and female nine-grade students.

Instrument

After reviewing previous theoretical literature related to the subject of the study, the (linguistic and mathematical) multiple intelligence measurement improved by Massarwah (2015) is utilized. It consisted of: 15 items about linguistic intelligence and 14 items about mathematical intelligence.

Applying the instrument of the study

10 educational Psychology specialists verified the validity of the study's instrument. It was also checked through measuring and evaluation. In addition, the reliability of the study's instrument was checked through applying it twice to an exploratory sample with a time interval of two weeks. The repeated reliability coefficient of (linguistic and mathematical) multiple intelligence respectively was (0.83 & 0.88). After that, the instrument was applied to the original sample of the study during the first academic semester of 2015 /2016.

Results and discussion

The first question: What is the extent of higher primary stage students' possession of (linguistic and mathematical) multiple intelligence in the schools of Al-Shobak district?

Table 1 Arithmetic mean and standard deviation for the students' responses to linguistic and mathematical) multiple intelligence measure

Intelligence	***Arithmetic mean***	***Standard deviation***	***Level of Intelligence***
Linguistic	3.98	1.01	High
Mathematical	3.70	1.14	High

The results in Table 1 indicate that there are virtual differences in students' possession of (linguistic and mathematical) multiple intelligence. For instance, students' possession of linguistic intelligence obtained an arithmetic mean of 3.98 with a high level of intelligence. However, students' possession of mathematical intelligence got an arithmetic mean of 3.70 with a high level of intelligence.

It can be attributed to the variance in the level of intelligence among individuals. It is noticed that the arithmetic mean of linguistic intelligence is higher than that of the mathematical intelligence. It can be explained that student's relationship with family and the surrounding environment is considered as an important factor in their acquirement of language. It was confirmed by Gardner (1983), as he stated that multiple

intelligence is affected by environmental factors. In addition, practicing various forms of linguistic learning; reading, writing and listening shall lead to increasing linguistic intelligence which is increased in the light of having these effectors. In addition, the individual's language acquisition starts from the moment of birth. As for developing the logical mathematical intelligence, it comes in later stage, as one gets older.

***The second question*:** What are the abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the Arabic course?

Table 2 Result of multiple regression analysis for the Arabic course (Y) upon multiple intelligence (linguistic X1, Mathematical X2)

	R	R^2	***Unstandardized Coefficient (b)***	***Standardized Coefficient (β)***	***Constant (a)***	***F***	***Sig.***	***Sample Size***
Linguistic (X1)	0.770	0.592	0.243	0.268	-2.383	85.011	0.006	120
Mathematical (X2)			0.166	0.542			0.000	
$Y = -2.383 + 0.243\ X_1$								
$Y = -2.383 + 0.166\ X_2$								

Table 2 points out to the results of multiple regression analysis of the Arabic course through multiple intelligence (linguistic X1, Mathematical X2) (the predictor). It is noticed through the results that the equation of the sample's total regression that the increase in linguistic intelligence (X1) with one unit- shall make an increase of (0.243) in the student's average in the Arabic course (Y).

It is noticed through the results that the equation of the sample's total regression indicates that the increase in mathematical intelligence (X2) with one unit- shall make an increase of (0.166) in the student's average in the Arabic course (Y).

Results also show that (linguistic and mathematical) multiple intelligence is able to explain a percentage of (59) % of the students' marks variation in the Arabic course. This percentage is statistically significant for linguistic and mathematical intelligence. Accordingly, we are able to predict the student's mark in the Arabic course through linguistic and mathematical.

It may be attributed to the nature of academic achievement that is affected by many factors and variables. In other words, intelligence in general does not have a clear effect without having motivation, self-confidence and effort. For instance, linguistic intelligence increases with the increase in reading and comprehending vocabulary. It can be attributed to the academic curricula which are filled with too much information. It is also attributed to adopting teaching strategies that are based on spoon feeding, which participates in the students' linguistic enrichment. In addition, language proficiency plays a role in the process of teaching math.

The results are inconsistent with Adawi (2008), Fotini (2001), McMahon & Rose (2004) and Snyder (2000). For instance, all of these studies indicated a positive relationship between linguistic intelligence and academic achievement. They have also indicated that it is possible to predict the academic achievement through multiple intelligence.

The Third question: What are the abilities of (linguistic and mathematical) multiple intelligence in predicting the academic achievement of students in the math course?

Table 3 Result of multiple regression analysis for the math course (Y) upon multiple intelligence (linguistic X1, Mathematical X2)

	R	R^2	***Unstandardized Coefficient (b)***	***Standardized Coefficient (β)***	***Constant (a)***	***F***	***Sig.***	***Sample Size***
Linguistic (X1)	0.813	0.661	0.351-	0.410-	1.482-	113.841	0.000	120
Mathematical (X2)			0.316	1.093			0.000	
$Y = - 1.482 - 0.410\ X_1$								
$Y = - 1.482 + 1.093\ X_2$								

Table 3 points out to the results of multiple regression analysis of the math course through multiple intelligence (linguistic X1, Mathematical X2) (the predictor). It is noticed through the results that the sample's regression equation indicates that the increase in linguistic intelligence in one unit shall lead to a decline of (0.410) in the student's average in the math course. The sample's regression equation indicates that an increase of one unit in the mathematical intelligence shall lead to an increase of (1.093) in the average of the student in the Math course.

Results also indicate that (linguistic and mathematical) multiple intelligence can explain 66 % of students' marks variation in the math course. This percentage is statistically significant for both the linguistic and mathematical intelligence. Thus, we can predict the student's mark in the math course through linguistic and mathematical intelligence.

It is noticed that mathematical intelligence help predict the academic achievement in the math course with a higher rate than that in the Arabic course. It can be attributed to the use of teaching strategies based on the theory of multiple intelligence by most math teachers which leads to increasing the possibility of predicting the student's mark in the math course through mathematical intelligence. In addition, the rise of the students' motivation and enthusiasm to answer the multiple intelligence measure led to an increase in their academic achievement on the measure. Thus, it was reflected positively on the correlation between their scores in mathematical intelligence and marks in the math course.

The study's results are inconsistent with the results of Pajkos & Klein (2001) and Afanah & Al-Khazendar (2004) which showed that there is a positive relationship between multiple regression and academic achievement in the math course. In addition, using strategies that are based on multiple intelligence theory led to an increase in the academic achievement of students in math. The study's results are consistent with the results of Chan (2001), which showed that it is impossible to predict the academic achievement of students in the courses of math and Arabic through multiple intelligence.

Conclusion

The study concludes that there is a correlative relation that is statistically significant between multiple intelligence and the academic achievement of students. The possibility of the prediction of the marks of students

through linguistic intelligence is higher in the Arabic course than the math course. The possibility of the prediction of the marks of students through mathematical intelligence is higher in the math course than the Arabic course. Academic achievement is a multi-aspect phenomenon that is not affected by intelligence only, but by other variables, as well. An example of these variables is motivation, exerted efforts, and self-confidence.

Recommendations

1. Emphasizing the use of teaching strategies that are based on multiple intelligence while teaching.

2. Emphasizing that there shall be an increase in the attention and care of school and academic administrations to developing the multiple intelligence of students.

3. Establishing special programs that are concerned with developing the multiple intelligence of students.

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PROFESSIONAL COMPETENCES OF MUSIC TEACHER: ATTITUDE OF STUDENTS

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Abstract: The importance of the teacher's role in society is predetermined by developing and ever-increasing advances in science, technology and social relations, which also create new demands for young people and adults. This article analyses expectations of students (pre-service music teachers) about the competences of a contemporary music teacher. The concept of the professional music teacher is revealed and validated; successful professional activities of music teachers are also highlighted. The data of the qualitative research (content analysis) related to the music teacher's personal traits, general pedagogical and subject-specific competences are introduced. It has been revealed that scholarly music teachers have certain traits, which reveal themselves through the teacher's professionalism, competence, personal qualities and values.

Keywords: music teacher's competences, subject-specific competence, musical education, student's attitude.

Introduction

In contemporary society it is crucial for teachers to understand that the school and learners are undergoing changes. Therefore the teacher cannot stay aside and has to find time for self-education and self-development in order to not stay behind innovation (Fuller & Bown, 1975; Zhu, et. al. 2013). Thus, teachers' readiness to work under new conditions gains importance. The assessment carried out by the European Commission (2016) showed that Lithuania does not adequately develop the skills important for a young person. Although the level of education has improved, some students do not have sufficient skills. It is recommended to pay closer attention to learners' cognition, substantiation of educational practice on research, work organization, situation analysis, leadership and teamwork applying the project and research methods. Increasing the professionalism of teachers is a strategic goal of education in Lithuania. The aim of the State Education Strategy for 2013-2022 (2012) is to achieve establishment of a professional, continuously developing and efficient pedagogical community. To ensure the growth of teachers' professionalism in the future, it is important for all teachers to be equipped with strong professional competences (Selvi, 2010). However, the decreasing authority of the school and the teacher is more often perceived as the cause of teachers' professional problems and the result of inappropriate teacher competence (Nedzinskaitė & Barkauskaite, 2017). Teacher competences are closely related to their suitability for pedagogical activities. K. Gupta (1999) states that competence is knowledge, skills, attitudes or behavior patterns that enable one to perform the activities of a given occupation or to function to the standards expected in employment. Studies conducted by researchers show that, while discussing a contemporary teacher, students highlight professional pedagogical competence, which is revealed through the teacher's intention to teach students to learn, to professionally present the content of education, to use different teaching methods that stimulate the activity of students, to differentiate educational content and to manage the educational process (Galkienė, 2011). Therefore, an individual, who seeks to become a teacher, must manage his or her life according to the requirements for the profession of a teacher, which inevitably requires certain personal qualities as well as skills necessary for a teacher, practical skills and fundamental knowledge that every teacher that is willing to work with learners should have. Requirements for the competence of Lithuanian teachers are defined in detail in the Description of the Teacher's Professional Competences (2007). Thus, a changing approach to the educational process promotes changes and raises new requirements for the teacher: to take up other unusual roles, to reflect and to develop the existing competences and to acquire new ones. M. Binkley, et al. (2010) have divided the 21st century skills into the categories: ways of thinking (creativity/innovation, critical thinking, problem solving, decision-making, learning to learn); ways of working (communication, collaboration); tools for

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working (information literacy, ICT literacy); living in the world (citizenship, life and career, personal and social responsibility - including cultural awareness and competence). These 21st century skills are defined as cross-disciplinary ones and are relevant to many aspects of contemporary life in a complex world. It is not enough for a contemporary teacher to be just a good specialist in his or her subject and to possess pedagogical knowledge and abilities (Korthagen, 2004; Grahn & Öfverström, 2009; Bates, 2011). Openness to innovation, autonomy, flexibility, creativity, collaborative skills, critical thinking and ability to make mature professional development decisions are equally necessary (Goodson & Hargreaves, 1996; Reagan, 2010). Consequently, discussing teachers' competences in order to improve the educational process at school is of utmost importance.

Statement of the Problem

The significance of teacher's professionalism, competences and personality traits for the quality of education has always been an important target of scientific interests. The purpose of this study is to reveal the reflection of this problem in terms of the attitude expressed by current students. The competences of music teachers coupled with personal qualities as well as with general, pedagogical and subject-specific teacher competences, form the basis for achieving the highest proficiency of the music teacher.

Purpose of the Study

The purpose of study is to identify the important qualities and competences of contemporary music teachers from the perspective of students.

Music Teacher's Professional Competence: Review of Literature

Contemporary musical education is perceived as a process that integrates creation, creative ideas and their practical implementation, develops musical skills, values and understanding of music. According to Z. Rinkevičius (2005), performing the role of the creator and with the help of expressiveness, a music teacher is able to instil experienced emotional values to the classroom. A music teacher, being a creative personality, is able to present his or her subject in an original and distinctive way, communicating with students, encouraging their artistic taste and creative thinking. Musical education is part of learners' general education. It is particularly important providing each student with the basics of cultural awareness and musical competence, developing an emotional and creative personality, who is willing and able to participate in musical life in various forms (Lithuanian Primary and General Education Framework, 2008). However, musical education in school practice is still perceived traditionally, without proper consideration of the dynamics of society's development and qualitatively new competences. According to M. L. Mark, & P. Madura (2010), G. Gapšytė & N. Bankauskienė, (2016), the problem of the competence of general education music teachers is very important and it is necessary to look for ways and means to improve these competences. S. Kauffeld (2006) states that the competences can be subdivided into four main categories: professional competences (e.g. knowledge of processes), methodological competences (e.g. techniques to structure yourself), social competences (e.g. socially appropriate behaviour in interactions) and personal competences (e.g. strategies to handle yourself, e.g. self-reflection). According to the author, the results show that hypotheses are fully supported for methodological competence, partially supported for professional and self-competence and not supported for social competence. Furthermore, the profession of music teacher includes many areas in which one can present himself or herself not only as a music teacher but also as an artist. J. Lasauskienė (2010), for example, distinguishes the functions of the music teacher's professional activity: he or she is able to organize the lesson's activities, to prepare and organize the events of organization or community, commemorative and thematic concerts, musical projects, to organize non-formal education, to lead orchestras, choirs, vocal and instrumental ensembles and soloists. When discussing the expression of the competences of the general education music teacher, H. Šečkuvienė (2008) notes that the music teacher must have good knowledge of the systemic fundamentals of special musical

subjects, teacher's professional musical expression is very important, the teacher himself or herself should participate in some performing activities, constantly accumulate, update his or her musical aesthetic experiences and be able to convey these values to the learners. Similarly, E. Balčytis (2008) emphasizes that the teacher of music must be able to play piano and other instruments, have well-developed musical, vocal hearing and voice, lead choirs, instrumental and vocal ensembles, orchestras, know how to conduct orchestras and to educate soloists, be able to plan and deliver music lessons at different stages of education, be well aware of music education programmes, educational systems, textbooks and other educational aids, understand and apply modern technologies and perceive ethno culture, etc. Being a professional music teacher demands more than just musical skills and understandings (formal and/or informal) or having practical savvy and experience. These abilities and qualities are necessary but not sufficient for teaching music thoughtfully, wisely, effectively and compassionately (Elliott, 2012). It can be noted that the profession of music teacher is broad and multifaceted and very important in today's education, because it enhances the children's artistic taste to music, develops the perception of the music world, and introduces spiritual, artistic, musical and cultural values.

The professional competences of music teachers have also been studied by J. Abramauskienė (2002), M. J. Bergee & S. M. Demorest (2003), J. Eros (2013), Koca (2017) and other scholars. The works of these authors mostly emphasize the teacher's subject competence, while other scholars (Isbell, 2008, Begić, et al., 2017) focus on the importance of the personalities of the teacher pedagogical, psychological qualities and socialization for the successful work of the music teacher. These are key factors in aiming to distinguish the competences of a contemporary music teacher.

Organization of the Study

Research Instrument and Methodology

The study was conducted in 2017 using a written surveying method with an open-ended questionnaire. The questionnaire focused on the presentation of the aspects of the music teacher's professional competences. The methods of scientific literature analysis and qualitative research were applied. The content of the answers to open-ended questions was analysed applying the method of qualitative data (content) analysis. J. V. Anfara & K. Brown, et al. (2002) notes that the content analysis is a valid method of qualitative diagnostics, which allows making specific conclusions based on the analysed text. It can be stated that the text presented by the student is the material of the content analysis as an educational diagnostic study and reflects the process of personal reflection, which is an essential aspect of experiential learning (Creswell, 2009). A model specific to qualitative research is followed: presenting genuine statements of participants of the study, codifying all the information into categories and subcategories, interpreting it in terms of the attitude of the respondents towards the profession of music teacher and identifying the personal qualities and traits, general teacher and subject competences that should be acquired by a good music teacher. Having applied the methodological concept of qualitative diagnostics (Mayring, 2000), the obtained results allow to determine the specific features of the context in which the participant operates, and, on this basis, to anticipate the change of activity and the needs of development of competences.

Participants

In total the study involved 44 3rd-4th year students of music education at Lithuanian University of Educational Sciences, who took part in the research after their teaching practice. Such students are already able to partially evaluate attitudes and music teachers' competences. The majority of the respondents were females (85.2%) and the average age of the respondents totaled 21 years. The research sample was compiled by means of targeted screening.

Research Ethics

All students agreed to participate in the survey on voluntary basis. The confidentiality was kept during the research. The research topic, problem, purpose and nature were presented to the participants of the study. The consent of the participants was obtained and the aspect of free decision-making was considered, that is, the respondent's ability to refuse to participate in the survey.

Results & Discussion

The students' answers were analysed while evaluating their attitude towards the teacher, who appeals to them. Taking into account the content of proving statements, four components have been distinguished: 1) personal qualities of a music teacher; 2) general pedagogical competence; 3) subject competence; 4) teachers' traits unattractive to students. On the basis of the results of the conducted study, D. Strakšienė (2004) emphasizes the importance of the teacher's personality type to the quality of teaching organization: it is argued that those teachers whose professional types are based on favourable professional approaches courageously use various forms of organization of learning, complementary means and demonstrate their abilities in the teaching process. On the other hand, teachers who do not trust their professional skills often negatively assess the cognitive-emotional tone of the lesson, poorly evaluate the learners' discipline in particular, avoid using a wider variety of teaching aids and demonstrating their skills. Therefore, it is important to identify what qualities a contemporary music teacher should have.

Personal qualities of a music teacher deserve a special attention when it comes to the picture of a professional music teacher, who is cohesively leading the educational process for the learners. The general cultural competence is reflected in the teacher's personal qualities and his or her attitude to work. It is important to take a closer look at the insights made by the students (Table 1).

Table 1: Students' attitude towards personal features of a music teacher

Category	Subcategory	Statements
Personal qualities of music teacher	Communicability	*"communicative"; "ability to communicate"; "communicate with learners"; "good at cooperation"; "effective communication".*
	Love for the learners	*"loving learners"; "love students"; "love for each student"; "love their students"; "love the work".*
	Responsibility	*"responsible", "sense of responsibility"; "responsibilities"; "respect"; "responsibility".*
	Creativity	*"creative"; "imagination and creative"; "originality"; "with imagination".*
	Sense of humour	*"humorous"; "humorous language"; "having a sense of humour".*
	Friendliness	*"friendly"; "friendliness"; "friendly with students".*
	Sincerity	*"sincerity"; "sincerity"; "sincerity".*
	Honesty	*"honest"; "honesty"; "conscience"; "conscience".*
	Patience	*"patience"; "patience".*
	Others	*"organized"; "with personality charm"; "must have lofty morality"; "excellent morals"; "self-confidence"; "self – regulation"; "ambition"; "nice looking"; "like the sunshine in the school"; "positive emotions".*

Most of the students are inspired by communicative, responsible, creative, friendly, sincere, honest and patient teachers, who love their learners and have a sense of humour. They disclose the personality of the teacher not only through his or her social perception ("communicative", "loving learners"; "understanding learners"; "having a sense of humour"; "creative"; "organized"; "with personality charm"; "of excellent morals"; "self-

confidence" and "positive emotions"), but also through his or her personality traits ("responsibility"; "friendliness"; "sincerity"; "honesty" and "patience").

Music teacher's general pedagogic competence discloses the teacher's image through professional education. This competence is reflected in the 7 sub-categories identified after the content analysis (Table 2): good subject-specific knowledge, innovation ability, lifelong learning ability, knowledge of how to make others interested, ability to find common language with learners, respect for and understanding of them and being strict but fair. Most of the students like teachers who are skilled and knowledgeable in their subject and this is illustrated by the following statements: "ability to organize teaching"; "best professional knowledge, management experience and teaching experience"; "understanding of each student's learning situation"; "good language expression ability"; "ability to understand the students of different ages"; "ability to study and organize teaching materials". The innovation ability is justified by the students' thoughts: "ability to use modern information technology"; "ability to apply modern multimedia technologies"; "continuous improvement in teaching innovation"; "high ability to innovate"; "able to adapt to modern education". The ability of the teacher to evoke interest is grounded on the following thoughts of students: "ability to tell in an interesting manner"; "have a lot of motivation to teach"; "inspire with his or her work"; "motivation for learning and teaching"; "make the knowledge more interesting, more fun"; "let the children give full play to their imagination and creative space". Students are also fascinated by music teachers who "maintain good relationships with learners"; "always help or understand"; "are able to assess learners according to their knowledge and not relying on personal sympathy", "care for learners"; "and understand learners". It is interesting that students care if a music teacher is "strict but fair"; "able to control learners" and "supports discipline". According to the opinion of the scholars (Sonmark et al., 2017), the abilities to communicate and collaborate with learners, their parents, colleagues, to be aware of own needs and values and to find the appropriate means for their implementation are the most significant ones among the signs disclosing general pedagogical competence .

Table 2: Students' attitude towards music teacher's general pedagogic competence

Category	Subcategory	Statements
Music teacher's professional competences	Good subject-specific knowledge	*"ability to organize teaching"; "organizing ability of extracurricular activities"; "professional knowledge and teaching theoretical basis"; "should have best professional knowledge, management experience and teaching experience"; "understanding of each student's learning situation"; "a brilliant man of wide learning"; "good language expression ability"; "ability to understand the students of different ages"; "ability to study and organize teaching materials"; "the application ability of various teaching methods"; "determine the teaching objectives, developing and utilizing educational resources, ability to write teaching plans, analysis and organization of teaching materials, interpersonal skills, ability to organize and manage"; "can improve the interest of teaching and the learning efficiency of students".*
	Innovation ability	*"ability to use modern information technology"; "ability to skilfully use network information technology"; "ability to apply modern multimedia technologies"; "continuous improvement in teaching innovation"; "advanced multimedia teaching program"; "high ability to innovate"; "grasp of the modern multimedia technology"; "ability to adapt to modern education".*
	Lifelong learning ability	*"ability to learn lifelong, to sift the old, to activate the new knowledge and to accumulate knowledge"; "desire to improve the professional level, striving to be a qualified teacher"; "keeping pace with the times and constant update of our knowledge"; "constant improvement of*

		the level of their own education and teaching".
	Knowledge of how to make others interested	*"interesting lessons"; "ability to tell interestingly"; "interesting lessons and ability to teach something new"; "knowing how to make learners interested in the subject"; "ability to inspire with his or her work"; "motivation for learning and teaching"; "knowing how to make learners interested"; "ability to make the knowledge more interesting, more fun"; "letting the children give full play to their imagination and creative space"; "interesting teaching process and letting students study happily".*
	Ability to find common language with learners	*"always helping or understanding why you did not do homework"; "ability to maintain good relationships with learners"; "free attitude towards learners"; "loading learners with good mood".*
	Respect for and understanding of learners	*"ability to assess learners according to their knowledge and not relying on personal sympathy "; "care for learners"; "treating every student fairly"; "understanding the learners"; "understanding the learning situation of each student".*
	Being strict but fair	*"ability to control the learners"; "supports discipline"; "strict but fair".*

Music teacher's subject competence, which includes the teacher's preparation in terms of the subject, is another significant area for evaluating the teacher as a professional.

Table 3: Students' attitude towards music teacher's subject competences

Category	Subcategory	Statements
Music teacher's subject-specific competences	Musical skills	*"the skills of music professional technical level"; "excellent singing talent"; "expression ability"; "good skill of singing"; "basics of music theory, preliminary composing techniques, solfeggio, singing skills, ability of chorus and orchestra conductor, keyboard instrument"; "music analysis and music history"; "good playing level, playing skills, excellent classroom teaching ability"; "advanced teaching ideas, unique teaching style"; "good performance ability, ability to play instruments, good sense of music, good self-image"; "teaching ability, music classroom teaching is the core of music education work"; "good skills of playing musical instruments, expressive singing skills, some creative skills"; "give many interesting presentations"; "ability to perform on musical instruments, singing skills"; "able to play accompaniment".*
	Knowledge of music	*"interested in innovations, knowing the kinds of music, different genres"; "aware of interesting things about music"; "good knowledge of music education theory"; "professional music literacy"; "music classroom teaching"; "theoretical knowledge of music".*
	Attitudes and approaches	*"stimulating students' interest in music, inspiring students' creativity and ideas"; "inspired to create"; "a good aesthetic attitude"; "comprehensive musician"; "correct guidance of students, in love with music"; "guidance of beauty and emotion"; "ability to answer various musical questions".*

This competence is illustrated through the subcategory distinguished applying the content analysis: well-developed musical skills, music knowledge, attitudes and approaches (Table 3). Though it is proven by fewer probative statements, it is obvious that students focus on general professional education of teachers as specialists in the taught subject. Students are first of all inspired by teachers with good musical skills: *"excellent singing talent"*, *"expression ability"*; *"basics of music theory, preliminary composing techniques, solfeggio, singing skills, ability of chorus and orchestra conductor, keyboard instrument"*; *"ability to perform on musical instruments, singing skills, have some creative skills"*; *"ability to play accompaniment"*. The teachers' music knowledge is important as well: *"interested in innovations, knowing the kinds of music, different genres"*; *"aware of interesting things about music"; "theoretical knowledge of music"*. Meanwhile, the following is stated about the teacher's attitudes and approaches: *"stimulating students' interest in music, inspiring students' creativity and ideas"*; *"a good aesthetic attitude"*; "*guidance of beauty and emotion"; "loving music and learners"*. Students frequently identify the teacher's subject-specific preparation with the general teacher's education, his or her erudition. The music teacher's versatility is important to the students: *"well-rounded musician"*; *"inspired to create"* and *"able to answer various music-related questions"*.

Unattractive qualities of a music teacher are disclosed by 4 subcategories (Table 4): emotional factors, vocational skills, attitudes towards learners and others. The provided statements suggest what kind of teachers are not liked by the respondents: "*emotional, likes to read morals for nothing or for our personal opinions"; "often offends by meaningless comment"; "without any emotions and feelings"; "boring music teachers without patience in class"; "teacher who does not understand humour"; "feeling superior to others, displaying power"; "the teacher who is not strict with his students"* and *"without patience"*. Eight respondents have claimed that a music teacher does not have any qualities they do not like. Although the students' considerations about the unattractive qualities of a teacher are detected much less often, the very fact that they notice teacher's mood, shows the learner's sensitivity to the teacher's personality.

Table 4. Unattractive qualities of music teacher

Category	Subcategory	Statements
The music teacher's qualities they do not like	Emotional factors	*"emotional, likes to read morals for nothing or for our personal opinions"; "too much sensitivity"; "often offends by meaningless comments"; "without any emotions and feelings"; "too serious with students"; "boring music teachers without patience in class"; "teacher who does not understand humour"*.
	Vocational skills	*"exaggerated self-esteem"; "unable to explain well how to do certain exercises"; "exaggerated music reverence"; "inability to engage"; "sometimes deviating from the topic"; "the teacher without high music professional skills"; "imposing own ideas on the students and, thus, depriving their students of creativity and imagination"; "boring lessons with too much text explained"*.
	Attitudes towards learners	*"feeling superior to others displaying power"; "ordering to sing in front of the class and disregarding justifying reasons"; "disregarding learner's wishes"; "unfair and old-fashioned treatment of students"; "not responsible"; "the teacher who is not strict with his students"*.

Summing up the research results, it can be stated that students have not forgotten that the teacher first of all is a human being and have taken into consideration both personal and pedagogical qualities of their teachers. For the students, the teacher is primarily a "senior friend" with knowledge of the subject. They expect not only

scientific knowledge, but also lifelong advice, support and help with solutions to both scientific and personal problems. S. G. Nielsen and I. A. Westby (2012) argue that it is important to maintain a broad and open view, both in the development of professional music teachers and in what it means to be a professional.

Conclusions

The analysis of scientific literature showed that the competence of a music teacher embraces the teacher's knowledge, skills, abilities, values, attitudes and other personal qualities necessary for successful educational activity. It is a broad and multifaceted concept but very important in today's education as it enhances children's artistic taste to music, contributes to development of their perception of the music world and introduces spiritual, artistic, musical and cultural values.

The learners' answers about the contemporary music teacher allowed to distinguish four components: personal teacher's qualities, general pedagogical competences, subject-specific competences and unattractive qualities of teachers. Most of the students are inspired by communicative, loving, responsible and creative music teachers, who have a sense of humour, are friendly, sincere, honest and patient. The analysis of their answers revealed that the students notice a lot of delicate qualities of teachers. They disclose the teacher's personality not only through its social perception but also through his or her personal sense of these qualities. According to the students, to be the teacher of higher professional competence means having a good awareness of the subject, knowing how to make others interested, finding common language with learners, knowing ICT, respecting and understanding their learners and being strict but fair. While composing the picture of contemporary music teacher, the respondents distinguish the subject competence, which they highlight not only as perfect subject-specific preparedness of teachers but also focus on their general education and erudition. The students tend to remember that the teacher is a human being first of all and they value all his or her qualities: personal and pedagogical ones.

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INQUIRY-BASED LEARNING EMBEDDED IN 5E LEARNING STRATEGY TO INVESTIGATE LEARNING PROGRESSION OF GRADE 9 STUDENTS FOR FORCE AND EFFECTS OF RESULTANT FORCES ACTING ON OBJECTS CONCEPTS

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Abstract: Force and effects of resultant forces acting on objects concepts are difficult or abstract for our students. Thus, the main goal of this article focuses on improving academic achievement and learning progression of students. The research was designed as quasi-experimental design. We used both quantitative and qualitative data in order to investigate students' achievement and learning progression. We developed 9 multiple choice items and 4 open-end question for pre-test and post-test. Our examination was designed to assess knowledge, comprehension and application skill. Inquiry-based learning embedded in 5E learning strategy had potential to evaluate students' prior knowledge, and develop prediction, observation and interpreting data, collaboration and communication skill. The results found that 64.29% of students understood completely about the concept of force and net force insert on the object. Only 35.71% of students partial understood and no student miss concept. Moreover, students showed their learning progression in the positive way. In this point of view, we suggest that inquiry-based learning embedded in 5E learning strategy should be extent to the other abstract contents related to force concept.

Keywords: force and net force insert on the object; inquiry; 5E learning strategy; learning progression.

Introduction

There are a number of models of inquiry in learning science. Inquiry-based learning has been widely promoted to increase literacy and skill development (Brickman et. al., 2009) critical thinking skills (Thaiposri and Wannapiroon, 2015) learning motivation and interest (Wang et. al., 2015). The 5E leaning strategy has been proven to be one of the most effective inquiry learning model for physics and others sciences (Lena Ballone Duran and Emilio Duran, 2004). These learning processes are best accomplished using more student-centered active-learning strategies. For instance, exploration, questioning, making discoveries, and testing discoveries to search for new understanding (Lemlech, 2009).

Force and effects of resultant forces acting on objects concepts are graps to understanding (Prissana Rakbamrung and Preeyanan Thepnuan, 2013. Prissana Rakbamrung, 2015). Most of research focus on students' concept or perceptions while rarely research discuss about learning progression (Philip Johnson, 2013). Moreover most research use inquiry based learning without integrating with other learning approaches. This work thus interested in integrated inquiry based learning with 5E learning to investigate learning progression.

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Research goal and question

The present study intended to investigate academic achievement and learning progression of students. Learning through integrating Inquiry with 5E learning activities in stoichiometry. This aim raised the following question: can and to what extent can integrating Inquiry with 5E learning activities in stoichiometry improving academic achievement and learning progression of students towards science learning?

Methodology

Research design

This study was conducted at a middle school located in the western Thailand. The samples were 28 grade 9 students enrolled in science course for the first semester in 2017. The mixed-method approach employed to develop and validate a learning progression and assessment for teaching force and net force insert on the object concepts. The twelve multiple choice questions and 4 open-end questions were constructed by the authors but only ten multiple choice questions were used as pre- and post-test as a result of index of item objective congruence (IOC) which were evaluated by three physics experts. The usefulness of pre- and post-tests were quantitative indicator to measure student learning outcomes: academic achievement and learning progression. These tests also were used to identify and assess the possible effectiveness of an inquiry-based approach to 5E learning strategy. During students participated in an inquiry activity, the authors also gathered qualitative data from their work sheets. The treatment tools combined a developed lesson plan and a phet simulation (from: https://phet.colorado.edu/th/simulation/forces-and-motion-basics) were implemented to introduce learning context and activities for 60 minutes.

Learning context

The professional competences of music teachers have also been studied by J. Abramauskienė (2002), M. J. Bergee & S. M. Demorest (2003), J. Eros (2013), Koca (2017) and other scholars. The works of these authors mostly emphasize the teacher's subject competence, while other scholars (Isbell, 2008, Begić, et al., 2017) focus on the importance of the personalities of the teacher pedagogical, psychological qualities and socialization for the successful work of the music teacher. These are key factors in aiming to distinguish the competences of a contemporary music teacher.

Organization of the Study

Research Instrument and Methodology

Standard 4: Forces and Motion

Standard Sc4.1: Understanding of the nature of electromagnetic, gravitational and nuclear forces; investigative process of seeking knowledge and applying acquired knowledge for useful and ethical purposes

Grade level indicators for grade 9 student is explain acceleration and effects of resultant forces acting on objects.

Learning Procedure

This action research based on the POE (prediction-observation-explanation) approach. It was a problem-based lesson, taking 60 minutes for a period. The 5E learning strategy in the present study composed of five leaning steps as following:

Step1: Engagement - students were engaged in simple questions for 10 minutes in order to assess their prior knowledge from a previous class and their experiences in daily life. For this step, instructor asked students to observe a table which located in front of a class and used the simple questions such as what was a table moving? and how did a table move when student pushed it? Moreover, students should know about the basic knowledge of force concept such as its definition, unit, quantity type, and the effect itself.

Step 2: Exploration –the instructor showed the students how to learn from simulation (Figure1) and brief a basic concept on force characteristic and the Newton's first law of motion. Then each group of students (3-5 students for each group) was self-studied by watch forces in action and to record as many forces as possible. This step students could predict, observe, and explain on what they found from learning tool which took time only about 15 minutes.

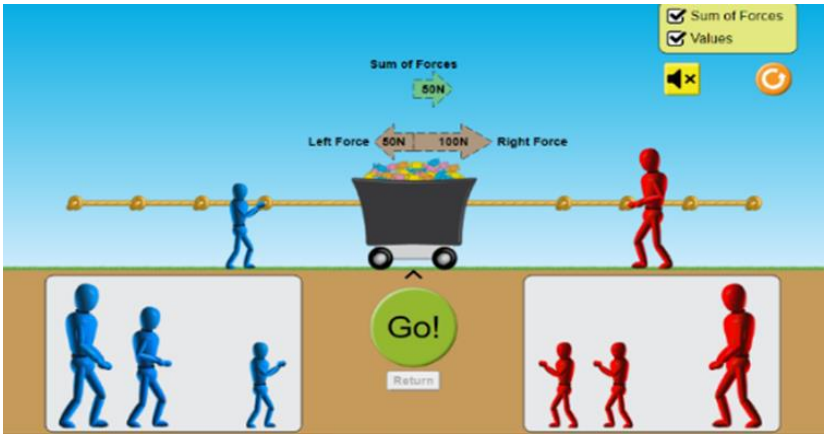


Figure 1 Show simulation about a basic concept on force characteristic and the Newton's first law of motion. (From: https://phet.colorado.edu/th /simulation/forces-and-motion-basics)

Step 3: Explanation –this step took one on fourth of a period, thus, the instructor chose only two questions to assess students' understanding and asked students to summarize on the Newton's first law of motion. As students could give knowledge gained by their comprehension, students in each group were asked to give an example of daily life phenomena and draw a concept map on their note books.

Step 4: Elaboration or Extension– students extend and applied their finding in a new context, especially a daily life one. Instructor asked them to divide into 4 group to lean through activity name "bomb disposal". Students in each group had to use force in equal for all fore for save them from a bottle bomb as shown in Figure2.

Figure 2 Show simulation about a basic concept on force characteristic and the Newton's first law of motion.

Step 5: Evaluation – students evaluated their experimental process and results in a variety of ways, such as an activity report, instructor observation during activity, and student presentations.

Results and Discussion

The results of this research are presented in the following sections.

Academic achievement

Table 1: Mean scores and standard deviations of the pre- and post-questions of 28 students

Pre-test				**Post-test**			
N	n	Mean	S.D.	N	n	Mean	S.D.
28	0	5.43	1.52	28	27	10.68	1.20

n = The number of students who gained higher than the prescribed criterion of 60%.
N = The number of sample.

Table 1 shows the average results of the pre-tests and the post-tests according to the achievement in the pre-test and the types of tasks. The criterion of 60% of the full score 13 points, which was 7.8 points, was used for passing the test.

Learning Progression

Figure drawing objective: Students created foreshortened figure drawing composition of bomb disposal activities with correct proportions and value gradation.

Table 2: ***The students' drawing and correct proportions and value gradation.***

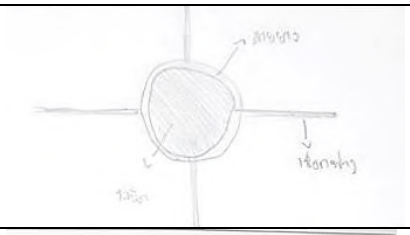
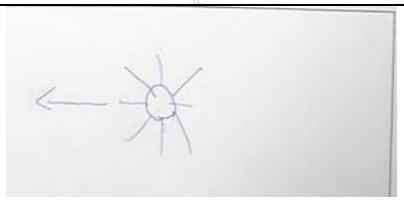
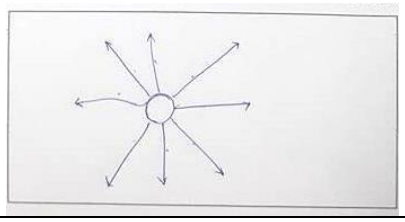
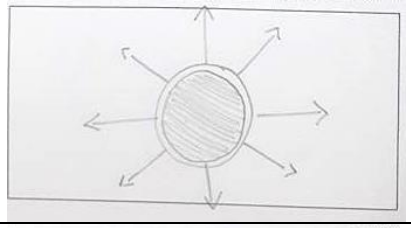
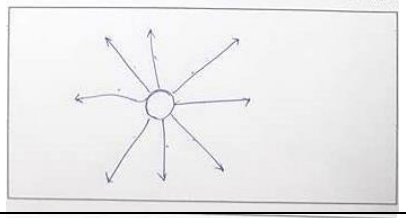
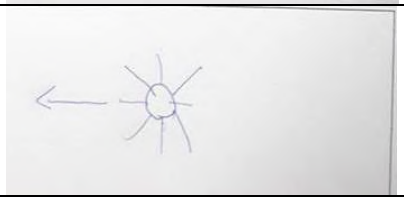
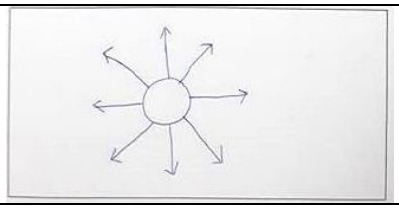
Drawing development level	Students' drawing	Correct proportions and value gradation
1		*Knowledge & Understanding*: The students demonstrated a limited knowledge of artform studied as evident in their current work. *Application*: The students had basic forms and addressed proportion at a very limited level.
2	 	*Knowledge & Understanding*: The students demonstrated a very limited knowledge of artform studied as evident in their current work. *Application*: The students had basic forms and addressed proportion at a very limited level. The drawing is inaprpriate for the task.

Table 3. Shows the students' drawing and descriptions of the free-body diagram representing the external forces acting on the bottle bomb and students' descriptions.

Development level	Students' drawing of the free-body diagram	Students' descriptions
1		Rubber moved along direction of force. Force in each direction is not equal. If force in left-hand direction was higher than force in the right-hand direction, bomb was occurred in left-hand direction.
2		Moving along force direction. Force is more than zero then we can move the bottle bomb.
3		Moving along net force direction

4		Moving along force direction

The students' drawing displays a basic drawing of free body diagram of a system which consist of an object and a various force vectors. The author can divide learning progression of student from theirs' drawing and description in to four stages as shown in Table 3.

Conclusions and Suggestion

This work can conclude that inquiry-based learning embedded in 5E Learning strategy in effective learning strategy as it can be in the form of problem and task for triggering student engagement. The experimental results indicated that students' learning progression for grade 9 students displayed knowledge, comprehension and application thinking skills. The positive in learning progression improve academic achievement for two times.

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EFL UNDERGRADUATE LEARNERS' READINESS TOWARDS MOBILE LEARNING

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Abstract: Prior to the implementation of the technology, assessing learners' readiness for its using is imperative. So, the study applied Theory of Planned Behavior (TPB) to investigate whether Iranian EFL learners are ready to be involved in using mobile technology in English language learning process. The survey used in the study was administered to a whole cohort of 200 EFL undergraduate students from different fields attending a course in English as a Foreign Language at an Open Learning University. Based on TPB, the learners' mobile learning (mLearning) readiness on nine factors, which are perceived ease of use, perceived usefulness, attitudes, student readiness, subjective norm, perceived self-efficacy, learning autonomy, behavioral control, and intention, was assessed. The results revealed that the learners were ready to use mLearning as soon as possible. The outcomes of the study would be beneficial to educational designers, English language teachers, policy-makers to implement mLearning for the purpose of teaching and learning English language. Hence, ELT material designers and teachers should attempt to provide multiple opportunities for the EFL learners to communicate with their peers and teachers both in and out of the classroom, and to enable them to be self-directed learners.

Keywords: Mobile Learning (mLearning), Theory of Planned Behavior (TPB), EFL learners

Introduction

In recent years, the innovations of mobile technologies are rapidly attracting the interest of educators in various academic programmes to facilitate teaching and learning beyond classroom walls (İlçi, 2014; Warnich & Gordon, 2015; Shadiev, Hwang, & Huang, 2017; Xu & Peng, 2017; Sun, Lin, You, Shen, & Luo, 2017; Ahmad, Armarego, & Sudweeks, 2017; Li, Lee, Wong, Yau, & Wong, 2017; Miglani & Awadhiya, 2017). Nowadays, mobile technology provides teachers with diverse opportunities to deliver interesting learning materials. Miangah and Nezarat (2012) state that learning through mobile devices also provides the learners with the opportunity to learn in a non-classroom context, such as on the bus, outside, at work or home. For instance, through mobile devices, teachers and learners can receive and send emails, text messages, visual material, audio material and video material. So mobile learning can be utilized for the delivery of learning contents and promoting interaction between students and teachers outside the classroom (Bachore, 2015). In addition, learners can listen to the lectures, cooperate with the peers to ask question and solve their problems (Matasić, Eret, & Dumančić, 2011). mLearning also facilitates personalized learning in the way that learners decide which learning materials and in which format to learn based on their needs and interest. In this study, mLearning refers to the process of using mobile devices such as mobile phones, smart phones, PDAs and tablets for improving formal and informal learning.

The development of mobile technologies is also changing the landscape of language teaching and learning and has created a considerable amount of interest among researchers to study its potential in enhancing English language learning and teaching (Sa'alek & Odeh, 2014; Wagner, Donskaya, Kupriyanova, & Ovezova, 2016). It is believed that mobile technologies can provide educational opportunities because of their unique characteristics such as its mobility, ubiquity, accessibility and privacy (Zaki & Yunus, 2015). In general, mobile devices have the potential to improve language learning by providing opportunities for students to have access to educational materials and self-regulate their learning as well as optimizing opportunities for teachers to share

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contents and communicate with students. Despite these benefits, little is known about the factors that will affect learner acceptance of mLearning. As students are surrounded with mobile devices which are widely applied for communication and entertainment, it is essential to investigate the learners' readiness to adopt mobile technology integrating into their education (Shorfuzzaman & Alhussein, 2016). According to Cheon, Lee, Crooks, and Song (2012), the mere availability of mobile technology does not guarantee its success in education, it is essential that learners first adopt mobile learning. To this end, the current study intends to investigate EFL learners' readiness for the implementation of mLearning in the context of Iran. The research aims to address the following research question:

What is the level of readiness of mLearning among EFL undergraduate learners?

Methodology

The study employed a descriptive method (survey) to assess the level of mLearning readiness of the Iranian EFL learners at Open University. The questionnaires adapted from Cheon et al (2012) were conducted online in the 1st Semester, 2017-2018. Cheon et al. (2012) designed a questionnaire based on the theory of planned behavior (TPB), considering the following different themes: perceived ease of use; perceived usefulness; attitudes; student readiness; subjective norm; perceived self-efficacy; learning autonomy; behavioral control; and intention. A total of 200 students from different fields of the study attending a course in English as a Foreign Language volunteered to response the online questionnaire. A five-point Likert Scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5) was used for main items. Data collected was analyzed by using Statistical Package for Social Science (SPSS) version 23 software.

Results and Discussion

The research findings were discussed based on two themes:1) learners' mobile phone features, and 2) learners' mLearning readiness.

Mobile Phone Features

The results revealed that all the learners have access to at least a smart phone using for Learning (56%), Entertainment (80%), Communication (94.5%), and Work (39.5%). Accordingly, mobile communication devices are applied mostly for entertainment, but it is possible to incorporate mobile devices into their learning. Moreover, more learners prefer using their smart phone (56%) to their laptop (44%) for the purpose of learning. The finding is consistent with the study of Abas, Peng, and Mansor (2009) which indicated a large number of learners had at least a mobile phone.

It is visible that Telegram among social networks is the most common App used between the learners (89.1%), and only a very small proportion (.5%, n = 1) had never used Telegram. This indicates that using Social network of Telegram can be used to facilitate learning and communication outside the classroom.

All the learners reported that their mobile phone can provide Video and Audio. Hence, instructional materials can be presented in the format of video and audio to support their learning.

mLearning Readiness

The results revealed the level of learners' readiness towards mLearning based on nine factors: perceived ease of use, perceived usefulness, attitude, student readiness, subjective norm, perceived self-efficacy, learning autonomy, behavioral control, and intention.

1. Overall mean

The overall mean and standard deviation for the nine factors were indicated in Table 1. The highest mean obtained was for students' attitudes (M=4.08, SD=.99) followed by Student Readiness (M=4.07, SD=0.92), Perceived Ease of Use (M=3.99, SD=1.13) and Perceived Usefulness (M=3.99, SD=.97). The study revealed that the learners highly welcome the integration of mLearning in their learning process. Similar to the present study, the results of Warnich and Gordon's (2015) study showed that a majority of learners (96%) had positive perception levels about using mobile phone technology for their course works. The findings provide teachers with the opportunity to blend mLearning with their conventional teaching.

Table 1 Overall mean for the nine factors

		Number of items	Mean	Std. Deviation
1	Perceived Ease of Use	3	3.99	1.13
2	Perceived Usefulness	3	3.99	.97
3	Attitude	3	4.08	.99
4	Student Readiness	3	4.07	.92
5	Subjective Norm	3	3.72	1.15
6	Perceived Self-efficacy	3	3.96	.98
7	Learning Autonomy	3	3.97	1.07
8	Behavioral Control	3	3.98	1.07
9	Intention	3	3.96	1.10

2. Perceived Ease of Use

As Table 2 shows, 76% students agreed or strongly agreed that mobile devices would be easy to use. Only a few of the students (16.5%) disagreed or strongly disagreed with the item. The results indicated 77 % of the students believe that mobile devices would be easy to operate. According to Cheon, Crooks, Chen, and Song (2011), when students feel that mLearning is easy to use they are more likely to use them in the learning process.

Table 2 Perceived Ease of Use

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
1. I believe that mobile devices would be easy to use.	12	4.5	7.5	34.5	41.5
2. I believe it would be easy to access course material with my mobile device.	6	8	7	40.5	38.5
3. I believe that mobile devices would be easy to operate.	4.5	8.5	10	27	50

3. Perceived Usefulness

Table 3 indicates that a majority of the respondents believe that using mobile devices would help them to improve their English.

Table 3 Perceived Usefulness

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
4. I believe that using mobile devices would improve my ability to learn English.	2.5	11	9.5	37	40
5. I believe that mobile devices would allow me to get my work done more quickly.	3	11	4	44	38
6. I believe that mobile devices would be useful for my learnir English.	4	9.5	6.5	49	31

4. Attitude

As the table shows, a majority of the students had positive attitude towards using their mobile devices in learning English courses. The findings are consistent with the results of Cavus's study (2011) that reported that the majority of students displayed a positive attitude towards mLearning and found it enjoyable. However, it contrasts with Stockwell's (2008) study that showed that a number of learners did not wish to embrace the mobile technology for the activities.

Table 4 Attitude

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
7. I would like my coursework more I need m-learning.	2	9	11	33	45
8. Using m-learning in my coursework would be a pleasant experience.	3	10	7	35	44.5
9. Using m-learning in my coursework is a wise idea.	3	8	10	38	41

5. Student Readiness

81.5% think other students would be in favor of utilizing m-learning in their coursework and believe that a mobile device could be a useful educational tool in their coursework. The majority (82%) think other students would possess adequate technical skills to use a mobile device in their coursework.

Table 5 Student Readiness

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
10. I think other students would be in favor of utilizing m-learning in their coursework	4.5	7	7	44	37.5
11. I think other students would believe that a mobile device could be a useful educational tool in their coursework.	3.5	8	7	44.5	37
12. I think other students would possess adequate technical skills to use a mobile device in their coursework.	1.5	6	10.5	39.5	42.5

6. Subjective Norm

Subjective norm refers to "the perceived social pressure to perform or not to perform the behavior" (Ajzen, 1991, p. 188). If the learners perceive that people who are significant to them, such as family, teachers or peers,

are in favor of using mLearning, their intention to use mobile technology is stronger. Table 6 demonstrates that majority of them believe that the significant people surrounding them agree with mLearning.

Table 6 Subjective Norm

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
13. Most people who are important to me think that it would be fine to use a mobile device for university course.	2.0	14.5	9.0	37.0	37.5
14. I think other students would be willing to adapt a mobile device for learning.	.5	11.5	10.0	44.5	33.5
15. Most people who are important to me …	1.0	14.5	9.5	41.5	33.5

7. Perceived Self-efficacy

The findings showed that the majority of the respondents had a positive self-efficacy in integrating their mobile devices in their learning courses. Only 14.5% reported that they don't feel comfortable to use their mobile devices in their courses. According to Mahat, Ayub, and Luan (2012), to be successful in mLearning, it is essential that learners have a high level of confidence in using their mobile devices in learning process.

Table 7 Perceived Self-efficacy

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
16. I am confident about using a mobile device for my courses.	4	11.5	10.5	42	32
17. Using a mobile device for my courses would not challenge me.	1.5	9.5	9	43.5	36.5
18. I would be comfortable to use a mobile device in my courses.	4	10.5	5	43.5	37

8. Learning Autonomy

78% of the respondents agreed or strongly agreed that they would be able to actively access coursework material with a mobile device, and 16.5% indicated 'disagree' or 'strongly disagree' to this idea. Additionally, 79% agreed or strongly agreed that they would have more opportunities to create knowledge in their coursework with a mobile device, and they would be able to control the pace of learning in their classes with a mobile device.

Table 8 Learning Autonomy

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
19. I would be able to actively access coursework material with a mobile device.	4	11.5	10.5	42	32
20. I would have more opportunities to create knowledge in my coursework with a mobile device.	1.5	9.5	9	43.5	36.5
21. I would be able to control the pace of learning in my classes with a mobile device.	4	10.5	5	43.5	37

9. Behavioral Control

A high percentage of respondents (82%) also had a sufficient extent of control to make a decision to adopt m-learning. Only 14% of the respondents indicated their disagreement to this belief. It is possible that their high behavioral control facilitates their intention to use mobile learning for their courses.

Table 9 Behavioral Control

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
22. I have a sufficient extent of knowledge to use m-learning.	7	6	7	40.5	39.5
23. I have a sufficient extent of control to make a decision to adopt m-learning.	7.5	6.5	4	44.5	37.5
24. I have a sufficient extent of self-confidence to make a decision to adopt m-learning.	4.5	9	6	45	35.5

10. Intention

A significant factor in the Theory of Planned Behavior is learners' intention to try to perform the behavior (Ajzen, 1991). According the findings, a majority of the respondents (75.5%) agreed or strongly agreed that they would like their coursework more if they used m-learning. Only 17% (n=34) of the respondents stated their disagreement to this item (item 35). 79% agreed or strongly agreed using m-learning in the coursework is a wise idea. Findings implied the learners' high intention to use their mobile devices for learning English.

Table 10 Intention

Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	%	%	%	%	%
25. I predict I would use a mobile device for my courses.	4.5	12.5	7	37	38.5
26. I plan to use a mobile device if a course has mobile learning functions.	6	9	7	37.5	40.5
27.I intend to adopt a mobile device for university courses.	4.5	11	5.5	39	40

Conclusion

The study aims to investigate EFL learners' readiness to adopt mLearning for their English courses in Iran. To this end, a survey based on TPB was conducted to assess EFL undergraduate learners' readiness towards mobile learning. According to the findings, all the learners had access to a smartphone. But the results showed learners use their mobile phones mainly for entertainment and communication rather than for learning purposes. Therefore, it implies the lack of learners' awareness on the benefits of mLearning. The empirical results also indicated that EFL undergraduate learners had a high level of mobile readiness for their studies. So, the findings will help the ELT material designers, policy-makers and teachers to bring significant changes and progress to teaching methods in learning context in Iran. It is imperative to invest in designing learning materials accessible to learners anywhere and anytime through using mobile phones.

This study focused on relatively small samples of learners (N=200) selected from one university in Iran that makes generalizations difficult. In addition, it would be valuable if the study assessed the instructors' mLearning

readiness which can play a significant role in students' mLearning readiness. Another study also could design various activities and observe leaners' readiness to use mLearning.

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ENHANCING CREATIVITY THROUGH BATIK TRAINING AS AN ATTEMPT TO PRESERVE CULTURAL AWARENESS IN PRIMARY SCHOOLS

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Abstract: Batik is an Indonesian cultural heritage that can enhance one's creativity in order to obtain independent achievements. Batik training is one that is conducted in the field of arts. Specific targets determined for this research are to assist primary students in discovering their talents, developing their skills and creativity in creating motifs that are sourced from the natural environment, implementing them in patterns, and training one's self through batik techniques. To achieve these goals, the research adopts the participatory action research method through training of batik writing and batik colet. Research results reveal that children are able to produce various creative works that are inspired by plants and animals. The increase of the student's creativity has been influenced by factors such as the student's personality, the facilitator as external motivational drivers, creative activity processes, and works as evidence of the children's learning outcomes.

Keywords: Batik training, children creativity, primary school

Introduction

Batik is a piece of wastra or cloth made with traditional technique of blocked dyeing using batik wax to prevent colors from penetrating (Doellah, 2002). The skill of batik has been passed down over generations. Batik is taught in non-formal institutions and some artisans are engaged in home industry for independent economic improvement. Batik contains local wisdom of Indonesian culture that may lead to enhance one's creativity towards an independent achievement. When we explore batik making, we will identify a number of techniques, methods, and cultural values supporting the establishment of character, personality, and disposition of a particular person. The basic idea of this study is that a good character has to be shaped and established since the early age. Therefore, the skill of batik making is a part of creative process that may lead to the improvement of independent attitude and behavior among children. Accordingly, children should have learned how to make batik since they are in primary schools. However, in Surabaya, there is not a single primary school that implement batik making in its academic curriculum. Primary schools should accommodate adequate local content in their curriculum in order to allow children to be familiar with cultural heritage and sustain them through cultural art works and vocational artisanship (Hsu, 20170. One of the objectives of art education is enhancing the creativity among children. Through art training, children will have acquire positive characters that shape their values of appreciation, critical thinking, and creativity through learning methods, media usage, and teachers. Batik training ensures the development of creative character. Students are expected to be responsive to visual forms, sensitive to environmental issues, and skillful in potential self-development. At the same time, students should be skilled at critical evaluation, have perseverant, thorough, and careful task accomplishment, as well as pride to one's self art works. They are expected to possess certain qualifications such as having factual knowledge in doing simple tasks using the specified tools, rules, and processes under the supervision of teachers. They should also be fully responsible for the process and accomplishment of the task.

Batik training is aimed towards cognitive development (knowledge), psychomotoric improvement (productive skill), and affective enhancement (attitude). This training emphasizes the importance of the learning of art and learning through art (Pinta, 2015). Training that is centered on cognitive development, psychomotor

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improvement, and affective enhancement will result in creative students. UNESCO (2009) reported that high-quality education has to lead to the achievement of four learning principles. They are 1) learning how to be, 2) learning how to learn, 3) learning how to do, and 4) learning to work together. The implementation of the four principles will ensure the extensive enhancement of students' creativity in the society (Shaheen, 2010). Parents, teachers, and community play important roles in the enhancement of a child's personality. Therefore, both internal and external school environment should provide adequate free space for creative activities.

The objectives of this batik training, using the techniques of painting and brushing (colet), are to identify the children's talents, improve skills, and enhance creativity. The traditional technique of batik painting involves the application of batik wax on a piece of cloth using a pen-like tool called canting. The coloring technique of batik colet is done by applying colors using a paintbrush without dyeing. Therefore, this technique is more simple and easy to learn for primary school students. This activity ensures interaction between students, teachers, and trainers that accordingly, may lead to direct dialogue, suggestion, and transfer of knowledge and skill

Research Method

Formal educational institutions provide appropriate places for the students to learn in order that the students can optimally enhance their talent and creativity in compliance with their personal needs. Education institutions should encourage students to create creative works through creative activities or creative processes. The environment that provides chances and opportunities for the students to perform creative activities and creative processes will lead to the production of creative works (Munandar, 2002).

This study employs participatory action research emphasizing the principle of learning by doing. Students, teachers, headmasters, facilitators, and researchers were engaged in the study. The subjects of the study are grade 6 students of Sekolah Dasar Negeri Simolawang KIP 156 Surabaya and Sekolah Dasar Negeri Sidodadi II Surabaya. Data was collected through observation on the process and outcome. Descriptive analysis was employed in this study to describe the learning processes oriented to the enhancement of cognitive, psychomotor, and affective aspects (action planning) to result in creative works. Students underwent the following four action learning steps:

1. Students explored active traditional batik artisans to enhance students' skill (seeing, listening, and learning from experts), and explored the city park to enhance students' sensitivity to creative personal potentials using the environment as the source of ideas. It is expected that they can document various motifs of flora and fauna (factual data of observation).

2. Students produced designs to improve the students' creativity through batik motif making and composition development.

3. Students joined batik training to improve students' skill through the making of batik works using both painting and brushing technique.

4. Students held work exhibitions to obtain appreciation, criticism, suggestion, and compliment in an attempt to objectively evaluate the success rate of the learning program.

Results and Discussion

Batik training is intended for the transfer of knowledge (scientific knowledge of batik art), creativity enhancement (motif making, composition, and coloring), and skill improvement (technique of batik making). Creativity is a popular term in art and design. It particularly refers to creative activities that result in new ideas

and innovation (Hurlock, 1978). The creative activities of batik training include introduction, knowledge transfer, and direct learning through seeing, touching, and feeling. Eventually, trainees will have to make or create an artwork. Acceptance, participation, and evaluation as parts of affective behavior will have to be enhanced since the early age. Knowledge, comprehension, analysis, application, and evaluation are intended to enhance cognitive aspects. Meanwhile, perception, preparedness, guided movement, accustomed movement, complex movement, movement adjustment, and work speed are intended to improve psychomotor aspects (Wardani, 2002). The creative processes in batik training will be further elaborated in the following discussions.

In the exploration of batik artisans, primary school students were expected to see, observe, know, and learn to know directly from the artisans in the batik home industry in Jetis, Sidoarjo, East Java (figure 1). The artisans shared knowledge about process, materials, tools, and their creative products. The skillful artisans shared their batik skills to the public since they are aware that batik has to be preserved by the new generation. Learning by directly observing artisans' activities and having a dialogue with them enabled the students to acquire knowledge regarding motifs, colors, and techniques. Therefore, students will be motivated to learn further.

The exploration of batik artisans also enabled the students to identify and explain the creative economic potentials and understand various kinds of creative products. Direct observation is needed to stimulate students' curiosity on something new or something that they have not studied at school. Students will give higher appreciation to traditional cultural values and the artisans' perseverance and creativity in the process of batik making. Outdoor learning through direct observation of artisans' activities is both enjoyable and educational. However, the information that the artisans gave to the students were occasionally not optimally recorded by the students.

Figure 1 Students had a field exploration to the workshop of Batik Amri Jaya, Jetis, Sidoarjo, East Java - Indonesia. The students enthusiastically watched and listened to the explanation of traditional batik making process. This exploration is beneficial for the students to be able to appreciate the artisans' profession. In addition, it is also useful for the students in identifying traditional art and culture existing and developing in local societies.

Therefore, teachers had to prepare worksheets to be filled up by students when they have an outdoor learning activity. They are requested to report what they have observed. However, in spite of the possibility of inadequate data recording in students' memory (optimally or less optimally remembered), this initial activity is beneficial and useful as a warming up exercise to enhance the children's creativity (figure 2).

Figure 2 Students made a report in the batik artisans' workshop by filling up the worksheet prepared by the researcher to identify how much they can record the information provided by the artisans.

The students also had another exploration activity in the city park of Surabaya. The objectives of this activity are to provide a learning medium and to explore the natural potentials in the development of batik motifs. Environmental exploration encourages students' creative sensitivity with the environment being the source of idea. The output of the exploration is the documentation of various motifs of flora and fauna. In the activity, each school was divided into small groups with one facilitator. The facilitators were the students of interior design department of Petra Christian University. The researchers ensured that the facilitators and school teachers facilitated the students in observing the trees, leaves, flowers, animals, and other natural objects that can potentially be resources for the development of batik motifs (stimulating the emergence of idea through observation of natural objects) (figure 3). When the students have observed various kinds of plants and animals in the park, the students created their own motif after discussing it with the group and the facilitator. They imitated and drew what they have observed based on their own imagination. The students observed, recorded, and identified the potential and characteristics of the objects. Furthermore, they identified, selected, drew, and created alternative motifs based on observation of nature.

Figure 3 The students made motifs with the environment being their source of idea. They were facilitated by the facilitators and school teachers

Natural environmental exploration is beneficial to identify various kinds of natural potentials. Equally important is that it encouraged the students' ability to identify their personal potentials that they are capable of making particular motifs and realized that they can find various kinds of alternative motifs based on environmental observation. The output of this exploration are various kinds of attractive, unique, and child-like flora and fauna motifs. Although they imitated what they saw directly, they created spontaneous and attractive forms of expressions (figures 4 and 5).

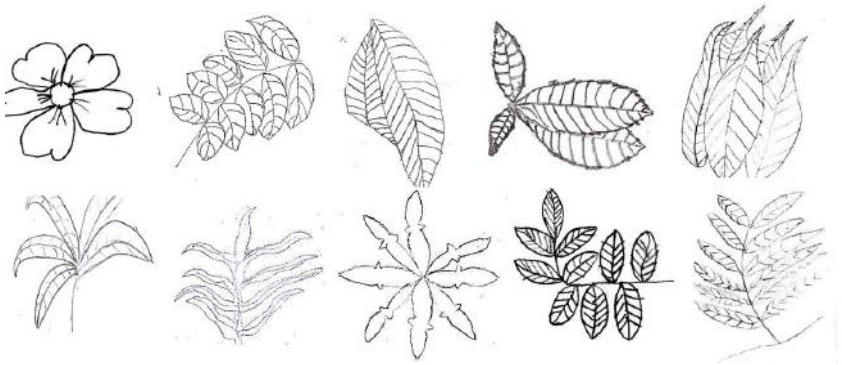

Figure 4 A number of sample leaf motifs created by the students of Sekolah Dasar Sidodadi II and Sekolah Dasar Simolawang KIP 156. Lines and arches are the shapes easily captured by children's visual sense. Therefore, the created expression is a well-arranged leaf. .

Figure 5 A number of sample animal motifs created by the students of Sekolah Dasar Sidodadi II and Sekolah Dasar Simolawang KIP 156. The students captured 3-dimentional shapes by their visual sense. Then they expressed them on a piece of drawing paper. They output was a two-dimensional shape. The shapes were the output of spontaneous expression, which was the specific characteristic of 10-year-old children.

In the design making, the teachers and facilitators assisted the students in identifying the uniqueness of their talents in a simple method. The tools and materials needed were only sample motifs made of paper, cotton cloth, and pencil (figure 6). In this training, two methods were applied. In the first method, the facilitators shared the motif already made by the students. Then they made a model with a piece of thick paper. Therefore, the students just made the composition on a piece of cloth based on the already prepared model. In the second model, the students made a motif with free composition on a piece of cloth. In the second method, the students were expected to have a free imagination and creation in a flexible time just like in the first method already practiced at school. Facilitators facilitated and divided the motif compositions into groups. The results of the activity indicated the students' eagerness in training. They were truly delighted and motivated.

Figure 6 Stages of motif composition making on a piece of cloth using the model already prepared by the students. .

Batik training includes the transfer of knowledge/theory on batik integrated into batik making with simple techniques. The work of batik making starts from the application of wax on a piece of cloth by a pen-like tool called *canting*. The next step is the coloring with the Colet technique. The final step is the wax removal or locally known as *nglorod*. At the initial step of batik making, the traditional technique with *canting* was introduced to students. They practiced how to apply wax to the previously prepared motif composition. The tools and materials needed among others are 1) wax for *nglowong;* 2) medium-sized *canting* to make motif outline or *nglowong* and small-sized *canting* for *isen-isen* (filling) or *cecek* (dots), or large-sized *canting* to give emphasis on the lines to be distinguished, 3) wax boiler and stove filled with kerosene, 4) hurdle for hanging the cloth (Ministry of Trade republic of Indonesia, 2008).

Batik is made of textile colored with a particular specific motif and wax-blocked dyeing. The technique of batik making is the process ranging from the textile preparation to the batik completion. The preparation work includes the preparation of the textile including *nggirah/ngetel* (washing), *nganji* (starching), and *ngemplong* (ironing, calendaring). Students of primary school did not need to perform this task. They only needed the knowledge of basic techniques. The process of batik making includes wax application on particular motifs of textile, *celup* (dyeing), *colet*, painting, printing to the removing of wax from the textile (Susanto, 1980). Batik painting with *colet* technique involves the use of *canting* for painting and coloring on the expected motif and dyeing technique to provide basic color for the batik. In this project, the students accomplished these activities together with teachers and facilitators or trainers (figure 7). Teachers and facilitators helped students find the uniqueness of their talent and appreciate them through realizing their drawings in the form of batik motifs. Involvement of teachers in the learning process by practicing would result in the improvement of the students' self-confidence, because student motivation can be impacted by teachers instruction (Lia M. Daniels, Amanda Radil & Amanda K. Wagner, 2016). The art education of requires teachers to construct learning experiences that generate creative products (Charles Gustina and Rebecca Sweet, 2014)

Figure 7 Stages of wax application on the textile with traditional batik painting using a canting. The students learn about perseverance, patience, meticulousness, and carefulness since they use hot wax.

The coloring process using the *colet* technique is an interesting creative process for students. Togetherness with teachers and facilitators can motivate students to learn more. Even the students will be motivated to try further. The coloring process used the remazol paint with the help of a brush (figure 8). Batik colors are obtained in different ways. First, batik can be colored with brush, drying, fixation, and *nglorod* (wax removing) and washing. In the process, the brushed textile is placed in a waterless solution for fixation. After that, the wax was removed from the textile in the boiling water. This process is known as *nglorod.* The textile is then dried in a place away from direct sunlight. The process is more simple and quick, without any process of dyeing as in the process of batik making with indigosol paint. Second, batik can also be colored with fifty grams of remazol paint per one liter of water, or five grams per 100 cc of water. Third, coloring can be obtained by fixation with water glass or sodium silicate of 50% or 30°. Fourth, fixation takes 60 minutes at room temperature (cooling). Fifth, the batik *colet* still uses the batik painting technique through the process of *nglorod* without boiling. Sixth, to have a red color or the substitute color for one piece of textile ten grams of remazol paint (200 cc of paint solution) and 0.25 liters of sodium silicate solution of 50% or 30° Be or water glass would be required. At this stage, the researchers had prepared all materials for this project.

Figure 8 Coloring stage on the composition already made with the colet technique using a brush.

The evaluation of activities revealed that remazol paint is safe for children and hence for the primary school children. The process was simple and fast. It could be easily and practically applied like the usual process of batik making. Therefore, the *colet* process with remazol color did not require a new difficult technique. In addition, the color was bright. The real color would soon appear after the students apply the brush on the textile. This condition simplified the process of color composition making. The batik had a bright color and good quality. It was also economic and thus it is affordable to middle-to-lower groups. The application was also practical and simple. Water glass or sodium silicate was used for fixation or washing in order to ensure that the color did not fade. The selected colors for the *colet* process in the training were yellow, wine-red, Turkish blue, green, orange, violet, and pink. Meanwhile, the materials were size one and two oil paint brushes as the *colet* tools, cups to contain paint, foam to color large areas, cotton buds to color little motifs, and water glass for fixation.

After the *colet* process was over, the next process was fixation with water glass. The textile was dried at room temperature for several hours. In real practice, fixation takes minimally 1 hour. In this training, considering the limited time, the fixation took only 15 to 30 minutes before the textile was dried. After the textile dried, it was placed in boiling water (*nglorod*). It was then dried again. The evaluation revealed that the students were very happy and were eager to perform further experiments. The students carried out all the processes perseveringly and orderly. They passed the stages independently under the guidance of facilitators and teachers. The students were very proud of their final output. Teachers and trainers had been engaged in the training and working. They contributed much to the success of the activities. The students enjoyed the process of batik making with teachers and facilitators under the supervision of the headmasters and researchers. The students' works can be used for decoration of interior design elements. The bright color compositions make students' batik decoration distinguished when they are placed on the walls, a representation of the children's cheerful character in the learning process (figure 9).

Figure 9 Fixation stage (the process of fixing the color to prevent from fading away) using water glass, removing the wax with boiling water, washing with cold water, and drying the batik.

The final activity was exhibition and joint work display. The exhibition is the final step in the training. Evaluation of the final works of the students revealed the display of student potentials as such as imagination, creation, and production of good works. This final step was an important moment for the students to show their personal existence and expression in the society. It was also intended to reveal students achievement to the society and to enhance self-confidence and self-awareness in one's potential (figure 10).

Figure 10 Joint exhibition as the final activity of the training to nurture the sense of pride among the students in the society.

The evaluation of the final products of the students revealed that the students generally applied free composition and centered arrangement, since the textile used for the training was in the form of square (figure 11). In general, the students were very happy with free expression. Initially, they were encouraged to use three motif compositions. However, they had their own creation and developed the compositions at their own will.

Figure 11 Students' final products representing the students' final expression in a free creation.

Overall, the evaluation results in batik training revelaed positive outcomes of the students' intellectual development as summed up in table 1 refers to the Bloom theory (Kevin Marjoribanks, 1980) and recommended pedagogical approaches (The College Board, 2012).

Table 1. Intellectual Behaviors Enhanced in the Batik Training for Primary School Students

No	Stages of Batik Training		Cognitive	Psychomotoric	Affective
1	Exploration of technique and skill of batik makers.	Visit to batik makers in the surrounding community	Get acquainted and familiar with various kinds of batik technique and the process of batik production.	Students learn to prepare, pay attention, hear, see, record the results demonstrated.	Students orderly pay attention, ask, and appreciate batik makers and creative resources.
2	Exploration of natural resource potentials	Visit to city park, surrounding natural environment.	Know and understand various kinds of motif and natural potential sources in the surrounding environment as the source of idea in the making of batik motifs.	Students learn to search, select, determine, hold, touch and write exploratory findings, and study within groups.	Students are able to identify, choose, orderly discuss options, and report on exploration results.
3	Motif design making	Batik motif making (various creations)	Students are able to find an idea and make various kinds of motif to be chosen in the batik composition making.	Reactions are directed, imitations, create motifs, designing motives with the group.	Students are able to discuss, perform, and complete the making of motifs
4	Design making	Batik motif composition making	Students are able to compose simple motif using the natural composition technique.	Students make a reaction that is directed, make development, and try a new arrangement, designing with the group.	Students are able to show, connect, combine, organize and refine the arrangement of motives.

5	Design Criticism	Reciprocal observation, mutual appreciation and input to students works among students or between trainers or teachers and students	Students are able to criticize the strength and weakness of students works together with the trainers and teachers.	Natural reactions, showing each other a good composition, discussions with teachers, facilitators, and groups.	Students listen to input / accept or reject criticism, able to differentiate, maintain, and improve the results already produced.
6	Design making	Developing the composition previously prepared based on the inputs	Students are able to develop shape composition based on suggestion / inputs / criticism from trainers and teachers.	Students improve, make changes, and work quickly.	Students take the initiative to improve, follow the advice, and make perfect the results of their works.
7	Pattern and composition making	Moving the motif and composition of batik to the textile	Students are able to make batik composition pattern on textile.	Natural reactions, complex reactions, and creativity are developed by the scraping of pencil on the cloth	Students follow instructions, move motives, organize and adjust the media.
8	Wax application	Process of batik painting on textile	Students are able to understand and comprehend the technique of batik painting on textile.	A complex reaction, creativity is developed by the drawing with wax onto a cloth.	Students carry out their work, carefully, diligently and thoroughly practice, and complete them.
9	Coloring	Process of coloring with the technique of Colet using a brush	Students are able to comprehend and understand the basic technique of batik Colet, choosing colors and making composition.	A complex reaction, creativity is developed by painting the color with a brush on a cloth	Students perform, practice, do their work carefully, patiently, diligently and thoroughly until completion
10	Fixation	Process of color fixing with water glass	Students are able to understand tools, materials, techniques, of color resisting techniques in order that the color does not fade away	Directed reactions, complex reactions, adaptation to ways / techniques, tools and materials	Students obey and abide by rules, and adjust to the chemical fluids used as media.
11	*Nglorod*	Process of removing the wax from the textile in the boiling water	Students are able to understand tools, materials, and techniques of wax removal from textile	Directed reactions, complex reactions, adaptations to methods / techniques, tools, and materials	Students obey and abide by rules, and adjust to the hot chemical fluids used as media
12	Washing and drying Batik cloth	Process of washing the residue of wax from the textile and dry it	Students are able to finish the final step by removing the residue of wax from the textile and dry it.	Directed reactions, complex reactions, adaptations to, ways / techniques, tools, and materials	Students are able to organize, develop tolerance and complete their task.
13	Exhibition of Works	Exhibition of batik already made by students	Students are able to make comparison and show existence.	Installing works, composing and placing works in exhibition displays	Students appreciate each other's work, and take pride in their own work, learn values of praise and appreciation

Conclusion

The process of learning how to be, learning how to learn, learning how to do, and learning to work together can be successful depending on the of students' personal factors such as willingness to study, having a curiosity, willingness to try, and willingness to do. Such conditions had resulted from the engagement and motivation of teachers and facilitators. In addition, mutual observation and reciprocal suggestion contributed much to the success of the work. Students were motivated to achieve further. Through the process of batik training, students practiced and developed skills, and enhanced their creativity in the field of art. It was apparent that students were able to produce various kinds of creative works. From the research, it was found that batik training for primary school students is influenced by four factors. They are personal factor (willingness and motivation to learn), motivator (support, appreciation, and compliment from environment, teachers, parents, and community), process (opportunity provided by schools for students to be engaged in creative activity to produce creative works), and product creation (students' creative works).

Appreciation to the art inherited from the ancestors of Indonesia should be preserved over generations through formal education since early years of education in primary schools. The research has revealed that batik training can enhance the students' cognitive, psychomotoric, and affective behaviours and potentials. When the characteristics of art training that is adjusted to the competence, knowledge, and skills of primary school students, batik art training have the potential to develop into official education in formal education institutes with its specific techniques. Batik art can become a prospect for further development of the society and hence should be included in the curriculum of art and culture. As such, skillful teachers with excellent batik skills would be required in the future and this would start from existing teachers' willingness to learn and share with the younger generation.

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UNDERSTANDING THE SPIRITUALITY OF TEACHER LEADERS IN EDUCATIONAL INSTITUTIONS IN ASIA

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Abstract: This study aims to understand the spirituality of teacher leaders in selected educational institutions in Asia. It proposes to describe the impact on how spirituality affects the overall teaching performance and leadership of teachers in the schools. It will use a mixed method research design which will analyze quantitative and qualitative data looking into possible factors, such as religion, age and tenure, that might affect the level of Spirituality of teacher leaders and describing individual experiences in teaching and leading. A baseline quantitative data was gathered from a total of sixty-one (61) teacher leaders, identifying their level of spirituality and correlating this with religion, tenure in the educational institution and age. A spirituality assessment tool that measures the spirituality based on the core values of the school was used to assess the level of spirituality of teacher leaders. Initial findings through statistical analysis showed that religion is significantly correlated with spirituality. Non- Christian respondents were assessed to show lower levels of spirituality than respondents who are Christians. However, other factors like age and tenure showed no significant effects on spirituality. Still a work in progress, this study will further gather qualitative data through interviews of select respondents describing their experiences and stories on how spirituality affects the way they teach students and lead teacher subordinates. This study further aims to identify the characteristics of teacher leaders from varied faith backgrounds and how their spirituality affects their leadership in creating an effective teaching and learning environment in an educational institution.

Keywords: Spirituality, educators, religion, teacher leaders

Introduction

In all educational institutions teachers are very much expected to contribute in achieving a meaningful learning experience for the students. Teachers and curriculum leaders play a very major role in the development of the curriculum (Bago, 2008) of any institution. The goal to create an effective learning environment for students are expressed in the vision-mission and values of institutions Educational institutions have set mission, vision and values that are expressed and integrated in the curriculum. For many institutions teachers share in the role of leading in schools in ensuring that the goals of the schools are met. Teacher leaders share in the responsibility for the success of the school (Harrison & Killion, 2008). They play various leadership roles like curriculum specialist, school leader, mentor, coach, facilitator etc. These roles may be assigned formally and informally by the school (Harrison & Killion, 2008). Thus teachers who become leaders and are expected to understand, appreciate and imbibe the values and principles of the institution where they belong to effectively contribute in the development and implementation of the curriculum or the overall learning experience of any student. They should able to experience and identify the connection between the school's mission –vision with their own personal mission-vision and goals (de Kierk-Luttig, 2008). Especially for teachers who hold important and leadership roles in the school, they share in the implementation of the mission and vision of the institution. This way both teachers and students can achieve their potential and become "the best human beings they can be" (de Kierk-Luttig, 2008). However, this will not be achieved if teacher leaders will have different attitudes and values to that of the institution. Attitudes and values of teachers greatly affect the learning behavior of the students (J. A. Lindholm & Astin, 2006). Issues and problems of teachers who serve as mentors may affect interaction with students, which was believed to be one of the most important learning opportunity for students

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(A.W. Chickering, 1969). Some if not most teachers just like professionals in the corporate setting may not see the connection and meaning of what they are doing in the institution to their own personal search for purpose. They may not see the ministry of teaching and leading a school as a vocation.

Connection of values of teacher leaders and the values of the institution can be achieved if the experience of teaching will serve as an opportunity for teachers to be holistically formed and developed. Formation of teachers as leaders should then be a major part of the goals of any educational institution. Educational leaders in any learning institution should make formation of their teachers as a priority.

Lasallian institutions are educational institutions ran by a congregation founded by St John Baptist De La Salle a French priest that lived in the 17th Century. They call the congregation the Brothers of the Christian Schools. Lasallian schools are Catholic schools which its primary aim is to "provide human and Christian education to the young especially the poor" (Guiding Principles of the Philippine Lasallian Family, 2009). These schools consider any one working "together and by association" towards the achievement of its mission as Lasallian (Circular 461, 2010). Further "Lasallian" is described as "a person who considers himself or herself as being in relationship of belonging with the Lasallian family or Lasallian institutions. This sense of belonging can be simply an affective one or it could also be simply an institutional one"(Botana, 2008). Lasallians, Botana (2018) mentioned then can be a "teacher… Christian, believer... in reference to John Baptist de La Salle, and therefore it designates the person who participates in the Lasallian mission based the Lasallian spirit". Teachers who hold leadership roles and have bigger responsibilities in Lasallian institutions are called Lasallians and are recognized to have a vital role in the formation of students and the sharing of the Lasallian mission and spirit.

With the existence of Lasallian institutions in Asia and around the world, Lasallian educators now come from varied cultural and religious backgrounds. This study is a description of how the Lasallian Spirituality is lived by these educators who hold an important role and responsibility in schools by being teacher leaders from different faith and religious backgrounds. The study will look into the factors on age, religion and tenure in a La Salle school that might affect their Lasallian Spirituality. It aims to provide an in depth description on how they become witnesses of the values and principles of the different La Salle schools in Asia and how they are effectively creating a positive impact in the learning experience of students entrusted to their care.

The study of Lasallian teacher leaders is a significant contribution in further understanding teacher leaders and administrators of the various Lasallian schools in the Asia and the Pacific. Given the diversity of cultures and backgrounds of these leaders, this study hopes to provide a common denominator of what makes these leaders uniquely Lasallian. The study will further contribute to the formation and development of teacher leaders. The deeper understanding of how spirituality has affected the way they teach, lead and influence students can also provide additional knowledge on how educational perspectives are shaped or created in schools (J. a. Lindholm, 2007). Moreover, the conversations that will be drawn from teacher leaders of different faiths and religions may provide an input on how interreligious or interfaith dialogues can be integrated in the teaching and learning process. As educators with different faith in a Catholic context, they can provide insights of how their spirituality is enriched with the Lasallian values of faith, service and communion in mission, which can be key to further formation of future Lasallian educators as leaders of institutions.

With this, educational leaders or administrators of the schools may be able to define the proper and needed approach to effectively form and develop these teacher leaders to become educational leaders who can effectively influence curriculum development including the overall teaching and learning experience on campus. This study may provide key decision points for educational leaders in managing teacher leaders from various backgrounds. Finally, decision-making considerations on hiring, developing and motivating teacher leaders may also be drawn from their insights and stories of how they continue to stay in the ministry of teaching, leading teachers and mentoring of students.

Religion and Spirituality

There have been numerous studies on religion and spirituality and how the two are differentiated. Certain studies predict that both religion and spirituality affect a person's **personality (**Saroglou & Muñoz-garcía, 2008). In the same manner, religious beliefs affect the way the person think, feel, and behave across a variety of context. In studies on religiousness vs spirituality, it provides evidences why people value spirituality more than religiousness, saying that there are some people who are more religious than spiritual (Zinnbauer, Pargament, and Scott 1999). In the study of Saroglou & Muñoz-garcía (2008) differentiated modern spirituality which "(a) includes a reference to transcendence or the sacred but not necessarily God or gods as defined within religious traditions and (b) emphasizes an individual reality of connection with transcendence, others, and the world in general, without necessarily belonging or referring to a particular religious institution or group" (e.g., Hill et al. 2000; Miller and Thoresen 2003; Piedmont 1999 cited at (Saroglou & Muñoz-garcía, 2008). Thus spirituality may or may not be affected by religious beliefs or associations. Spirituality, in the same study is explained to be an autonomous expression of the **individual's** relation to a transcendence or is independent to beliefs to a certain religious affiliation. Further both religion and spirituality play a very vital role in creating and understanding the meaning of **one's** life. In a review made by Farrell (2003) on the book **of Robert** Nash on Religious Pluralism, religion is mentioned "help us understand who we are, whom we belong to, how we should behave, and how we might come to grips with the mystery of our existence?" Spirituality and religion is further differentiated stating that religion is an organized community of faith while spirituality is more about personal belief and experience of a higher power (Tisdell, 2001). Further this study of Tisdell (2001) also presented a qualitative study identifying the three themes the further development of self-awareness, a sense of interconnectedness, and a relationship to a higher power. Thus with the definitions presented spirituality provides a common understanding the spirituality is important in the exercise of meaning-making in **one's** life. A study was done to identify the role of religion and spirituality in doing social work and the authors conclude that social work practitioners should consider the significance of religious and spiritual beliefs in their training and in the professional practice (Gilligan, P. and Furness, S., 2006).

In the various studies religiousness or religion and spirituality have varying effects on the personality, values and beliefs of a person. Thus both constructs can be used to understand people's approaches, principles and biases. These aspects in a person's life can actually be a means to achieve personal transformation and development.

Spirituality in Academe

Spirituality is believed to make a significant role in the life of a teacher. Various studies present the importance of spirituality in teacher formation and pedagogy in schools.

In the study on teachers in South Africa, there is a need to develop spirituality among the teachers. Teachers should be made to see the connection of the vision, mission and values of the school to the values and personal mission of teachers. With this teachers will consider the work of teaching as a vocation (de Kierk-Luttig, 2008). Concepts on spirituality should be used and introduced to teachers allowing them to go through the process of meaning making for them to better understand and appreciate the work as vocation that allows them to be more connected and whole. Further recommendations for teachers include:

"Mindfulness should be developed in teachers so that they can bring greater awareness to everything that happens at school, be more present in the moment and more aware of the dynamics of relationships. Teachers are engaged in the service of others and this dedication to the welfare of others creates a space for spirituality". (de Kierk-Luttig,2008)

Further in the study conducted by Lindholm and Astin (2006) on understanding the interior life of faculty, they mentioned that when faculty tend to be disconnected or live fragmented lives, when spirituality becomes unimportant in the way the live their lives, they can be very unaware of their deeply felt values and would avoid discussions on meaning and purpose of what they do. This then will lead faculty to have competing values and thus will greatly affect how they engage with students. Faculty will then have to choose between prioritizing advancing knowledge on the field vs. the commitment to educate students and serving the community, choosing individual professional pursuits vs nurturing an intellectual community (J. A. Lindholm & Astin, 2006). The study also further discussed that the behavior and attitude of faculty members greatly affect or are important to student development. The actions of the faculty in and outside the classroom can affect the learning environment of students and their career development. Faculty are primary adults in ensuring socialization that can impact student outcomes and experiences both positively and negatively (Chickering 1984 as cited in J.A Lindholm & Astin, 2006). Interaction with faculty not just affect intellectual and professional development but also enhance personal identity awareness and moral development. Thus this particular study highlighted the importance of the spiritual development of teachers in any educational institution. Highly spiritual teachers enhance the students' personal development, civic- minded values, diversity advocacy, student-centered pedagogy, civic-minded practice, and positive outlook on work and life (J. a. Lindholm, 2007) Studies on the development of spirituality among faculty or teachers are quite a few compared to studies on the spirituality of students in schools. However it is equally important to look into the different impacts of spirituality on how this can positively change teachers in the way they teach and influence students (J. A. Lindholm & Astin, 2006). In looking at the level of spirituality of teachers in higher education the results on this particular study showed that gender has an impact on the level of spirituality. Women are more spiritually inclined than men. Age was also a factor in determining the level and depth of spirituality among teachers. This is so because those who have gained experience and security in professional work tend to be more content with what they have and not seek for further self-actualization. Their lives are more integrated and balanced in the way they view their work and family life. Race and ethnicity were also factors that affected the level of spirituality of teachers as well as cultural backgrounds (J. A. Lindholm & Astin, 2006).

Spirituality has become a major theme not just in professional work and in academe. It has become an important aspect of human experience and avenue for learning and meaning making. Thus it shouldn't be ignored especially in the aspect of teaching and meaning making. (Tisdell, 2001). Spirituality is so important that it also affect the way people lead. Spirituality has a big role to play as well in portraying leadership roles (Bolman and Deal, 1995).

Spirituality in Leadership

In the study on the role of spirituality in the work of African-American women spirituality was seen to influence decision making and their views on leadership. It also influenced their personal choices in their work as principal and the ways they made their spirituality visible in school (Atlas, 2002). Moreover, these principles conceptualized spirituality as acknowledging that there is a higher being outside themselves, their relationship with the Higher Being and being able to be guided by this in every aspect in their lives (Atlas, 2002). In a similar study conducted on African American men who were administrators and at the same time pastors, spirituality has an impact in portraying their leadership roles. The findings of the study suggested that administrators should consider nurturing spirituality among leaders in the schools that will help cultivate a nurturing, caring and supportive school environment. It further suggested that professional development programs and workshops should include leadership and spirituality modules. (Jones, 2010). Furthermore the participants of the study also considered spirituality as way for them to connect with teachers, students and the community through building good relationships (Jones, 2010). In both studies on African –American women and men leader's spirituality has an influence in their leadership and in their decision making. Both studies also

suggested that spirituality helps in the nurturing of relationships with students and teachers. Thus spirituality becomes part of their core personal values influencing the way they relate and the way they lead schools. This is also supported by a study on school leadership and Spirituality conducted in Public and Catholic schools in Ontario. Spiritual practices of the school leaders were analyzed and how these affect their role as leaders. The study reported that their sense of spirituality is related to their core values. The participants considered spirituality as an integral part of who they are and this serves as a solid foundation of their work as school leaders (Dalia, 2005). This study further suggests that spirituality adds a dimension of the different theories of leadership. Spirituality serves as an orientation, a perspective and a motivator for school leaders (Dalia, 2005). Another study that provides a confirmation of spirituality having an impact on the decision making of leaders is a study done on public school teachers by Massenburg (2010). The study showed that spirituality of public school teachers and administrators evolved from their upbringing, specifically their religious background and influences from their parents. The study also emphasized that spirituality motivates them in making decisions that are critical in their work (Massenburg, 2010). The findings that support the interrelatedness of spirituality and religion also is shown in the study that reviews documents on definitions, distinctions of spirituality and leadership. In the study spirituality is tied to religion and leaders and managers can associate their drives and motivations on both spirituality and religion that affect their decision making process.

The impact of spirituality on leadership is supported by various studies that showed how leadership is influenced by spirituality in the areas on decision making and motivations. In this particular study Lasallian Spirituality is described and how this aspect of being Lasallian will have an effect on how teacher leaders lead and teach students in Lasallian educational institutions.

Lasallian Spirituality

Spirituality as we have defined it in several studies presents a way of living of an individual. This also describes how an individual relates to a higher being or God. Lasallian Spirituality as defined by Botana (2008) is a way of living Christian spirituality with the special perspective or dimension imparted by the Lasallian Charism. The Lasallian Charism and identity refers to the three "core values of Faith, Service, and Communion in relation to the training and formation of Lasallian associates and partners, the conduct of the Lasallian educational mission in schools and the socio-political involvement of the Lasallian Family" (Guiding Principles of the Philippine Lasallian Family, 2009, p. 5) Moreover he defines Lasallian Spirituality as a form of living the ecclesial communion for the mission. In addition Botana (2008) states:

Lasallian spirituality helps us to discover and to live our work of education as the privileged place of the educator in relation to God. Lasallian spir- ituality develops as a "spirituality of mediation", for it shows us how we ourselves are instruments in God's work, as mediators of his work of sal- vation with the young, ministers and representatives of Jesus Christ, the living word of God for those to whom we are sent. (p.65)

He made mention as well that the core of Lasallian spirituality is the spirit of faith and zeal where God is revealed or discovered through the mission that one has committed himself into (Botana 2008). These two areas "faith and zeal" are essential to the Lasallian charism. The spirit of faith is nurtured through prayer and zeal is best served through the active participation in helping the poor ((Mark, 2011). In the book of Botana (2008) he presented a discussion on the understanding of the Lasallian Spirituality of Non- Christian educators. He posed the question - can a Lasallian spirituality serve a non-Christian person to express the "profound sense" of his life and his relationship with God? He answered this with this pronouncement:

Lasallian spirituality is for many non-Christian educators a means to be better believers in their own religion or humanistic beliefs. It is for all Lasallians a point of encounter and a source of common understandings for the

mission that we share. We take a further step toward the roots: spirituality refers us to the charism that give it origin and, through it, to the Holy Spirit, who bestows it upon us. is is the root in which we need the definitive justification concerning why we are able to refer to the Lasallian spirituality of other believers who are non-Christians, or to the Lasallian charism that is embraced by non-Christian Lasallians. e Spirit of God, which "blows where it will" (John 3: 8), bestows its gifts not only to Christians but also to believers from other religions. (p.68)

This emphasis on Lasallian Spirituality of non- Christians presents the openness of the charism and its values to also be present even to teachers and students with other religion beside Catholic. It also affirms the value of communion in Mission highlighting the sharing of the Lasallian Mission regardless of religion or affiliation. On the other hand, Communion in Mission as a value that defines Lasallian Spirituality is defined in the Guiding Principles of Philippine Lasallian Family (2009)

As: *Solidarity, co-responsibility and collaboration directed towards the fulfillment of a common mission. In a Christian perspective, communion in mission is rooted in communion with God, which leads to communion with others in the mission of building communion in the world. (Endnotes no. 14, p.18) Communion "recalls the dynamic of association" by which the first Brothers bonded together for the sake of the particular mission entrusted to them by God (Guiding Principles of the Philippine Lasallian Family, 2009, p. 8).*

Botana (2008) shares that the link that unites communion with mission is the charism which in the end is the Spirit that lies in each of the persons who make up the Lasallian community. A Lasallian community is a group of persons that develops solidarity and unity of hearts.

Synthesis

The studies that were discussed in the review of related literature centered on Spirituality and leadership. Studies are also focused on the practice of spirituality in the academe and how teachers and educational leaders consider the impact of Spirituality in their leadership.

The review also provided a view on the difference of religion and spirituality and how this can be interrelated to one another. Religion can be a factor of spirituality however on the other hand spirituality may be independent from people's religious beliefs (Fry, 2003). Similar studies also were presented that provides a theory or knowledge that suggests that age, race and gender may be possible factors that affect spirituality of an individual.

Several studies also provided findings that spirituality in the academe are becoming to be an important aspect of the leadership of the teachers or educators. Decision-making is one aspect in leadership that can be influenced by the individual's spirituality. Further studies on leadership of teachers and the impact of spirituality creates a more meaningful and effective learning environment for both teachers and students.

There are not much studies on Lasallian spirituality of educators or of teacher leaders. Existing Lasallian research studies though provided additional view on Lasallian Spirituality and Charism and how this should be understood by members of the Lasallian family. It is in this light that this study hopes to provide more additional knowledge on how Lasallian Spirituality is lived and experienced by teachers specifically those who hold leadership positions. This study will hopefully provide more understanding and appreciation of how spirituality can be a facilitating factor to create a more effective learning and teaching experience for the Lasallian communities all over Asia.

Conceptual Framework

Figure 1. Understanding Lasallian Spirituality of Teacher Leaders and its impact on creating an effective teaching and learning experience

In understanding the Lasallian Spirituality of teacher leaders of Lasallian institutions the study would like to know the different aspects that defines the level of spirituality of teacher leaders. Teacher leaders are teachers that hold key responsibilities in schools like –mentoring, coaching, curriculum management, administration and management. Profile of teacher leaders like religion, age and tenure in the current institution will be considered as factors that might affect their level of spirituality. Given that they are teaching and leading in a Catholic institution and that the Lasallian Spirituality is based on Christian Spirituality (Botana, 2008), religion might be a factor on how Lasallian spirituality is developed.

Moreover, the qualitative research would like to further look for other aspects of the teacher leaders that can describe the Lasallian Spirituality of these Lasallian teacher leaders. Lasallian Spirituality will be presented as an expression of the Lasallian values of faith and zeal (Botana, 2008) and a commitment to be in solidarity or in communion with the other members of the community (Guiding Principles of the Philippine Lasallian Family, 2009).

Understanding the Lasallian spirituality of teacher leaders and describing how this affect their leadership, relationship and way of life will hopefully allow the study to further identify the impact on the teaching and learning experience of students and teachers in the community. The framework suggests that spirituality of teacher leaders provide a positive impact on how they lead in schools and how they effectively teach students.

Research Questions

The study provides a deeper understanding and description of Lasallian educators and leaders in Lasallian institutions in Asia. Acknowledging that these educational leaders come from varied backgrounds of culture and religion, it poses a greater need to define the characteristics of these individuals who shape the educational experience of Lasallian students based on the level of their Lasallian spirituality. The study aims to provide a description of how these leaders can are affected by their spirituality in the way they lead and teach. Specifically this study aims to answer the following questions:

1. What is the level of Lasallian Spirituality of the teacher leaders? Is religion, age and years in the service of teaching factors that affect their level of Spirituality? If these are significant factors, in what way do they affect their spirituality?

2. Are Christian and Non-Christian teacher leaders different in the way they practice their leadership and sprituality? In what way are they different?

3. In what way are students affected or impacted by these Lasallian teacher leaders with varied faith and religious backgrounds? How do their spirituality affect the way they lead other teachers and teach students?

The answers will provide a characterization of Lasallian educational leaders and how they can create an effective teaching and learning experience in Lasallian institutions. This study will provide information and knowledge on how teacher leaders can be formed and developed imbibing the Lasallian values of faith, service and communion in Mission.

Research Design

The study aims to provide a thorough description of the Lasallian Spirituality of teacher leaders of Lasallian institutions. The study would like to look into the lived experiences, thoughts and characteristics of these educational leaders to determine how spirituality is expressed and manifested in their life as a teacher and as a leader. It is for this reason why this study is qualitative research which will utilize a mixed method approach. The mixed method approach will be utilized to provide various ways to gather data from the participants of the study. A mix of quantitative and qualitative research designs will be utilized to gather and analyze data. Specifically, this study aims to conduct an explanatory sequential research design as it will gather quantitative data and after which a qualitative case study will be done on identified cases from the results of the initial analysis. Quantitative data will be identified from the Level of Spirituality of sixty seven (67) teacher leaders with different faith backgrounds from the Lasallian schools from the Asia-Pacific Region. These data will provide descriptive statistics and correlation on age, religion and tenure. A Lasallian Spirituality Scale will be used to measure the Level of Spirituality and the correlation to the factors that might affect the spirituality of teacher leaders. After analyzing the quantitative data, identified cases will be drawn from the sample and will be invited for in-depth interviews. The interviews will draw answers on how their spirituality is affecting their life and work as a Lasallian educator and leader. Drawing stories from their experiences in teaching and leading will be the focus of the interviews. A triangulation method will also be utilized to also gather data from students and teachers focusing on their feedback on the participant's way of teaching and leading. Interviews will be subject to qualitative data analysis. The mixed method design will be utilized as the approach to further describe how spirituality can affect the teaching and leadership experiences of Lasallian educational leaders. Employing both the quantitative and qualitative methods of research will provide a more comprehensive description of how teacher leaders create a more effective teaching and learning experience because of their spirituality and leadership.

Participants

The study will use a purposive sampling method in identifying Lasallian teacher leaders in institutions in the Asia and the Pacific. The Lasallian Spirituality Scale will be conducted to sixty- seven (67) teacher leaders from the member countries from the Lasallian East Asia District – Philippines, Singapore, Hongkong, Japan, Malaysia and India. The study purposively will choose thirty (30) Christians and thirty (30) Non- Christian teacher leaders. Teacher leaders are those who held or are currently holding leadership responsibilities including but not limited to coaching, mentoring, curriculum management, administration work and management in schools. Further, specific participants will be identified as part of the qualitative case study. These participants are those which are outliers or will have extreme answers based from the quantitative analysis. Identified participants will be subjected to in depth interviews. There will also be around 3-5 students and 3-5 teachers who are colleagues of these identified participants that will be invited for interview.

Data Collection

The research will have a mixed method design which will use various instruments as a tool to gather data. In the quantitative research method, the study will use the Lasallian Spirituality Assessment Scale developed and validated by Estanislao (2015). The Scale is a 15-item scale with three (3) factors that represent, Faith, Service and Communion in Mission. This instrument will be distributed to sixty (60) teacher leaders with varied faith

backgrounds – 30 are non-Christians and 30 Christians. These teacher leaders will be from the different Lasallian institutions from the East Asia. The instrument will be distributed through an online form and respondents will be notified through email. The respondents will be instructed to indicate their degree of agreement or disagreement for each of the statements by encircling the number closest to their response using a scale from "5" as Strongly Agree to "1" as Strongly Disagree with "3" as Undecided (Estanislao, 2015).

In the qualitative research method, interviews will be conducted to ten (10) select cases from the sample of participants. An interview guide will be utilized drawing stories and experiences describing the spirituality and leadership of these identified participants. To achieve triangulation, data from interviews of students and teacher subordinates will also be collected and will be analyzed. To summarize, data will be collected from 60 respondents of the Lasallian Spirituality Scale, interview responses from the ten (10) cases identified and lastly interview responses from 3-5 students and teacher subordinates.

Data Analysis

Data will be drawn and analyzed from the 60 respondents of the Lasallian Spirituality Assessment Scale using descriptive statistics, correlation and regression analysis. Descriptive statistics will provide information on the number of Christians and Non-Christian respondents, their age, gender and religion. Scores that measures their level of spirituality will be computed using a scoring guide. The mean scores will be part of the descriptive statistics and will be further analyzed. Factors on age, religion and tenure will be correlated to the scores on Lasallian spirituality to identify relationship and its significance. A regression analysis can also be employed especially on the factor of religion and spirituality. A test of significance will be employed on the relationship of these factors to identify significant factors that might affect the spirituality of the teacher leaders. To identify specific cases to be subjected for interviews, an outliers test can be done on the statistical data. Other cases can also be identified through the use of scatter plots and outliers test. The respondents from the sample will be identified for further data collection. Data from interviews with these chosen respondents will be content analyzed. Certain themes will be coded and further analyzed to provide an overall description of the characteristics of these teacher leaders on spirituality and leadership.

Initial Results of the Study

This study made use of descriptive statistics and correlation tests to analyze the relationship of age, gender and years of service or tenure of teachers in La Salle schools to their levels of Lasallian spirituality. A total of 67 respondents coming from different La Salle schools in Asia answered the survey on assessing their level of Lasallian Spirituality through Google forms. The average age of the respondents is 44.8 and are mostly males. The average years of service of these teachers in La Salle schools is 14 years. Majority of the respondents are Christians (61%) from the Roman Catholic denomination. The following tables summarize the frequencies of age, gender, religion and years of service of teacher respondents.

To test the assumption that the age, religion and tenure or service in working in a La Salle school has a significant relationship or effect on their levels of Lasallian spirituality, this study made use of six (6) variables – one outcome variable which is Lasallian Spirituality and five (5) predictor variables - age, religion, tenure in La Salle school, years working in the academe and gender. Gender was also included to provide additional confirmation to previous studies made on spirituality of educators however Gender is not the variable that is included in the model that this study is trying to prove. The same with gender, the years of service in the academe is not a main independent variable that the model of this study is proving but the a description and analysis was made to further support previous research.

The Shapiro-Wilk normality tests revealed that the following variables' distribution were, strictly speaking, not normal: Lasallian Spirituality (W = .946, p = .006), age (W = .978, p = .006), years in current La Salle school (W = .931, p = .001). However, the distribution of years working in academe (W = .971, p = .134) appeared normal.

Thus the study made use of the Spearman's Rank Rho correlation test to determine the relationship of the non-normal distribution of the continuous variables – age, years of service in a La Salle school. Pearson's correlation test was used on the other hand to test the relationship of Lasallian Spirituality with the years working in academe or school. All variables positively are correlated with Lasallian Spirituality but the relationships are not significant.

The Welch Two Sample t-test of significance was used on the two variables gender and religion. Results showed that there is a statistically significant mean difference in the level of Lasallian Spirituality between Christians (M=4.46, SD=.42), and Non-Christians (M=4.20, SD=.40), t(55)= 2.54, p = .013. Christians have higher levels of Lasallian Spirituality compared to Non-Christian respondents. However, test results showed that there is no significant mean difference on the level of Lasallian spirituality between males (M=4.36, SD = .42) and female respondents (M=4.37, SD=.30), t(64)=.07,p = .936. Tables 7 and 8 show the results below.

To further identify the effect of the relationship of the variables identified in the study – Age, tenure and religion with Lasallian Spirituality, a linear regression analysis was done on these variables. As expected religion has a significant predictor of the level of Lasallian spirituality showing that the test was significant. Further it showed that the various linear regression models on the variables used as a predictor of Lasallian Spirituality.

The results of the statistical analysis done on the study showed that age and tenure is not a factor in determining the levels of Lasallian spirituality of teachers. On the other hand, religion has an effect on the levels of Lasallian Spirituality of teachers.

This initial result of the study provided the researcher the data needed to proceed with the further qualitative research. Certain participants will be interviewed to further validate the results and to provide answers to the other research questions.

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COLLABORATION SKILLS OF 8TH GRADE SECONDARY STUDENTS IN SCIENCE LEARNING WITH ENGINEERING DESIGN ACTIVITY

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Abstract: Collaboration is now identified as an essential 21st century skills that make it become an important learning outcome. On the other hand, there is a growing demand to infuse engineering practices into science learning as it relies more on social involvement, such as collaboration, to solve problems. Thus research examining students' collaboration skills which emerge during activities involving engineering design is needed. Through observation method with rubric adapted from social skills of collaborative problem solving, emerging collaboration skills during collaborative engineering design processes are identified. The subject were 18 secondary students in 8th grade who were engaged in science lesson involving designing, constructing and testing analogical model of blocked artery and medical device to treat it. Varied level of participation, perspective taking and social regulation skills are evident throughout the lesson. Finding suggests that individual collaboration skills are dependent upon skills of collaborating partner

Keywords: Collaboration, engineering design, science learning

Introduction

Collaboration is identified as an essential 21st century skills because current workforce, living and citizenship are now dominated by complex problems that often require multidisciplinary solutions which should be done collaboratively instead of by individual alone. Accordingly, recent curriculum reforms in Indonesia have acknowledged the importance of collaboration skills to tackle 21st century challenges. Now, science learning is expected to attribute children with learning skills that include critical thinking, problem solving and creativity as well as able to communicate and collaborate (Kemendikbud, 2017).

On the other hand, there has been a demand to incorporate engineering approach into science learning (Wendell & Rogers, 2013). The engineering design practices are regarded as promising vehicle to boost science learning and achievement (Yanyan et al., 2016). Moreover, the use of engineering design support the development of twenty first century skills (Guzey et al., 2016) as it provide students with an effective way to tackle open-ended problems (Yanyan et al., 2016). At the same time, engineering design deepens their understanding of crosscutting concepts and ideas from related disciplines (Hernandez et al., 2014). In engineering design-based instructions, regardless the approach of engineering integration which is used, activities done by students always involve collaborative work as a team instead of individuals (Wendell & Rogers, 2013).

Incorporating engineering design into instructions has attracted increased attention as numerous researchs shown promising findings. However, current studies have not yet investigated in detail on how collaboration skills emerge within engineering design based science environment. Most studies focused on how such instructions improve science content gain (Barrett et al., 2014; Marulcu & Barnett, 2016; Moreno et al., 2016; Wendell & Rogers, 2013), problem solving skills (Yanyan et al., 2016) and attitude toward science and engineering (Guzey et al., 2016; Wendell & Rogers, 2013). In light to that, this study aims to provide insight about how collaboration skills appear within engineering design activity in science lesson as well as identify how well the students perform those skills.

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Research Framework

Collaboration is considered as an essential learning outcome for the twenty-first century (Lee, Huh & Reigeluth, 2015) as it contributes to one's personal success in the collaborative learning context and workplace (Lai, DiCerbo & Foltz, 2017). Lai et al. (2017) define collaboration as the process of interaction that requires individuals to work together toward a common goal. It is characterized by interdependence among group members (Riebe et.al, 2016) and coordination between the members to construct and maintain a shared conception of a problem (Rochelle and Teasley, 1995). Similarly, Griffin (2015) describes that collaboration is the activity of working together to reach a common goal where communication, cooperation and responsiveness are used as its building block.

There are two dimensions of collaboration which includes interpersonal skills and self-management skills (Stevens and Campion, 1994). One of the most cited conceptualization of collaboration under interpersonal skills is collaborative problem solving (Lai et. al., 2017) which refers to collaboration within problem solving activity. Here, collaboration serves as the social domain that provides more advantages compared to individual problem solving as it allows effective division of labor, incorporation of information from various perspective, experiences and sources of knowledge and enhance creativity and quality of solutions through stimulation from other's idea (OECD, 2017). In contrast to individual problem solving, the steps to reach collaborative solution in collaborative problem solving is observable through verbal and non-verbal signals (Griffin et al., 2015) shown by each of the individual members of the group.

According to Hesse, et al., (2015), the collaboration skills in collaborative problem solving comprises of three capabilities as follow:

1. Participation

There are three indicators of observable behavior that inferred student participation, namely action, interaction and task regulation. Action describes the level of individual participation in general without taking into account whether the action is in coordination with others' effort ranging from whether the student is passive, active, dependent upon prompt and support, or initiate the action independently. Interaction is defined as the capacity to give response to action or do coordination with other group members. The level of interaction started from simply answering an inquiry, to initiating and arranging efforts actively or stimulates other to respond. Task completion skills refer to the driving force of participation which includes sense of responsibility for the outcome of collaborative work.

2. Perspective Taking

Perspective-taking refer to the individual ability to see a situation from other's perspective, which includes responsiveness and audience awareness as its sub skill elements. Responsiveness describes as a set of skills to integrate contribution of others in collaborating group into students own thought or action that involve accepting, ignoring or adapting contributions of others. On the other hand, audience awareness described as the ability to tailor contributions to others' needs which require the awareness of how to adapt behavior that is more suitable for other to respond.

3. Social Regulation

Social regulation is needed for the sake of diversity of knowledge, experiences and resources which is used in problem solving. The sub skills for social regulation are metamemory, transactive memory, negotiation skills and responsibility initiative. Metamemory refer to the ability to evaluate his or her own knowledge as well as

strengths and weaknesses. Transactive memory described as individual understanding of knowledge, strengths and weaknesses of others. Negotiation skill involves the act to compromise or reaching a resolution. Responsibility initiative skills refer to the ability to take initiative in different ways such as focus on individual tasks, work on shared problem representation, initiate strategic plan and monitor groups progress.

Engineering Design

To collaborate, students need to engage in a lesson where the content is debatable and on which varied perspectives exist (Lie et al, 2017). Integrating engineering design into the lesson could be a way to develop collaboration skills. It is because, when compared to many other fields, engineering activities relies more on social involvement, cooperation and collaboration to solve the problems (Housholder and Hailey, 2012). In addition, engineering activities encourage students to contextualize the problem with respect to existing knowledge and experience as well as to communicate what they learned as a result (Rush, 2010). Moreover, engineering activities is student driven, interdisciplinary, collaborative, and technology based (Han et al, 2014).

Engineering itself is defined as the action to improve lives by transforming the world in such a way using the knowledge and observation (Bagiati & Evangelou, 2016). Specifically, Yanyan et al., (2016) define engineering as the application of science to solve problems. Wendell & Rogers (2013) defined engineering as the process of designing and prototyping a tangible solution, or the model of a solution, to an authentic problem. It is in line with the statement of other researcher who said that the central part of engineering is the act of designing in which the engineers use when they are trying to create new technology or solve particular problems (Guzey et al., 2016) that employs cognitive reasoning, mental models and operation that has to fulfill constraints (Lewis in Schnittka et al., 2016).

Several studies identified three approaches to incorporate engineering practices into instruction (Marulcu & Barnett, 2016; Schnittka et al., 2016; Wendell & Rogers, 2013): (1) design based modeling developed by Penner et al., (2) engineering for children by Roth and (3) Learning by Design by Kolodner et al. Studies on various science concept and design challenge has been addressed using these three approaches where the activities done by students always involve the iterative process of engineering design namely: (1) Identify Problems, (2) Develop possible solution, (3) Design the prototype that fulfill criteria and constraint, (4) Construct the prototype, (5) Test the prototype, and (6) Redesign.

A number of studies have revealed advantages of engineering design activity on particular learning domains. Finding shown that the engineering design-based science is somehow connected with improvement in science content gain (Barrett et al., 2014; Marulcu & Barnett, 2016; Moreno et al., 2016; Wendell & Rogers, 2013) and problem solving (Yanyan et al., 2016). In attitudinal domain, it is found that engineering design based science produced positive attitude toward science and engineering (Guzey et al., 2016; Wendell & Rogers, 2013). However, even though collaboration and teamwork is an essential component in engineering design activity, no studies have yet elaborated in details as how the collaboration skills could be fostered. Thus, there is a need for more studies that document collaboration skills which occurred during the lesson incorporating engineering design activity.

Methods

To provide insight about how collaboration skills appear within engineering design activity in science lesson the descriptive method was implemented. The observation technique was used to capture students' collaboration skills. Two observers did the observation along meeting 2 until meeting 4. Each observed males and females group separately. Female and male students were assigned in different group following school's regulation. Group assignment is made based on subject teacher's consideration to ensure that each group is heterogenic.

The observers used observation rubric which is developed from the indicator of collaboration skills in collaborative problem solving by Hesse et. al. (2015). Prior to observation, researcher sits together with the two observers to ensure similar perspective regarding the rubrics. Due to the complexity of the skills, an audio recorder for each group is used to capture students' discourse during the lesson to ensure that there is no missing evident. In addition, interesting findings during the lesson was recorded in observers' notes.

Observed behavior indicated particular elements in the three sub skills was then rated from 1 to 3 points that represent low, medium and high level of the skill. The scoring is used to compare students' average performance in each engineering design process to see at which process particular collaboration skill is best performed. The level of collaboration skills emerge in each engineering design process is elaborated in form of percentage of students performing those skills.

Context

This study took place in one of private school in Lembang area, Bandung, West Java which combines national curriculum and Cambridge curriculum. The subjects were 18 students in 8th grade secondary level who were engaged in 4 meetings-lessons involving engineering activity. The topic discussed along the lesson is related to disease in circulatory system and means to treat it. Students were given engineering journal to document their work along the lesson.

During lesson 1, students were introduced to several diseases in circulatory system. The teacher then further directed students to discuss about coronary heart disease (CHD). This disease will then be used as the context for the engineering activities students will have in the upcoming meetings. This lesson aimed to help students construct sufficient knowledge before they engage in engineering activities. Teacher used PowerPoint slides to guide whole class discussion about causes and symptoms of CHD as well as general overview about means to treat it, including angioplasty method. Furthermore, teacher shown video about how angioplasty method is done but limited to how the catheter is inserted into human body.

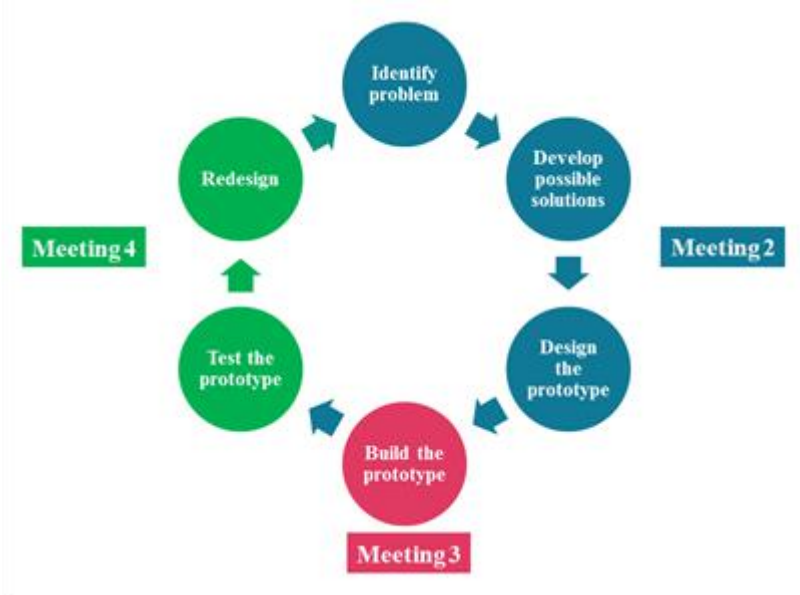

Figure 1 Engineering Design Process in meeting 2, 3 and 4

In lesson 2, the students started to engage in the first three engineering design processes, namely identify problem, develop possible solutions, and design the prototype that fulfill criteria and constraints. In the

beginning of the lesson, researcher who acted as the teacher assigned the students into group of three or four. In this lesson, students were given an ill-structured problem in form of scenario where students acted as medical engineer. Each group was encouraged to identify the main problem and state it in question form. Each group were then need to think about possible solutions to that problems. After that, teacher explained criteria and constraint that their solution should fulfill. Based on that criteria and constraint each group will then decide the best solution and draw the design of the prototype. In addition, students also have to indicate the materials that they need along with its amount.

In lesson 3, each group was asked to construct the prototype based on the design that they have made. The prototypes made by students are analogical model of blocked artery and catheter to be used in angioplasty method. All materials were provided by the teachers. The prototypes were then tested in lesson 4. Each group took turn to test their prototype in front of the class. To check the effectiveness of their catheter, students measured the time taken for 2L of blood, which is made from water and food coloring, to flow through the artery before and after the treatment with catheter. In redesign, students were guided to improve their prototype based on strengths and weaknesses they have found during testing.

Results

Table 1 Percentage of students performing collaboration skill during engineering design activity in meeting 2.

Elements of Collaboration Skills	Engineering Design Process								
	Identify problem			Develop possible solution			Design prototype		
	Low	Mid	High	Low	Mid	High	Low	Mid	High
P1 – Action	16.7	27.8	55.6	16.7	27.8	55.6	16.7	27.8	55.6
P2 – Interaction	16.7	27.8	55.6	0	44.4	55.6	0	16.7	83.3
P3 - Task completion/ perseverance	16.7	27.8	55.6	0	27.8	72.2	0	16.7	83.3
PT 1 - Adaptive Responsiveness	44.4	55.6	0	55.6	27.8	16.7	16.7	27.8	55.6
PT 2 - Audience Awareness	83.3	16.7	0	38.9	44.4	16.7	11.1	38.9	50.0
SR 1 – Negotiation	0	0	0	0	0	0	0	44.4	55.6
SR 2 - Self-evaluation	16.7	0	0	0	0	0	0	16.7	0
SR 3 - Transactive memory	0	0	0	0	0	0	0	0	0
SR 4 - Responsibility initiative	100	0	0	83.3	16.7	0	44.4	33.3	22.2

Table 2 Percentage of students performing collaboration skill during engineering design activity in meeting 3 and meeting 4.

Elements of Collaboration Skills	Engineering Design Process								
	Construct prototype			Test the prototype			Redesign		
	Low	Mid	High	Low	Mid	High	Low	Mid	High
P1 – Action	0	16.7	83.3	0	11.1	88.9	0	11.1	88.9
P2 – Interaction	0	0	100	0	0	100	0	0	100
P3 - Task completion/ perseverance	0	16.7	83.3	0	50	50	0	50	50
PT 1 - Adaptive Responsiveness	0	72.2	27.8	22.2	66.7	11.1	22.2	61.1	16.7
PT 2 - Audience Awareness	16.7	66.7	16.7	16.7	72.2	11.1	27.8	61.1	11.1
SR 1 – Negotiation	11.1	44.4	44.4	16.7	22.2	61.1	55.6	22.2	22.2
SR 2 - Self-evaluation	0	0	0	11.1	16.7	0	0	0	0
SR 3 - Transactive memory	0	16.7	0	11.1	0	0	0	0	0
SR 4 - Responsibility initiative	27.8	44.4	27.8	27.8	44.4	27.8	16.7	27.8	44.4

P = Participation; PT = perspective taking; SR =Social Regulations

Descriptive analysis of each sub skills and its elements indicates that during identifying problem students perform high level of participation (55.6%). Differently, on perspective taking, middle level of adaptive responsiveness (55.6%) and low level of audience awareness (83.3%) are dominating. In terms of social regulation, no negotiation and transactive memory found. Only a few students perform low self-evaluation (16.7%) and all students shown low responsibility initiative (100%).

During developing possible solution, higher level of perseverance is evident (72.2%). 16.7% students perform high level of perspective taking and middle level of responsibility initiative which are previously performed in lower level. There was no indication of negotiation, self-evaluation and transactive memory during this process.

During designing prototype, the number of students performing high level of interaction (83.3%), perseverance (83.3%), adaptive responsiveness (55.6%), audience awareness (50%), and responsibility initiatives (22.2%) are increasing. Surprisingly, 55.6% students perform high level of negotiation and the rest of the students are in middle level. Middle level of self-evaluation appeared as much as 16.7%.

The number of students performing high level of action (83.3%) and interaction (100%) increased during constructing the prototype. Most of the students performed middle level of perspective taking (adaptive responsiveness 72.2%; audience awareness 66.7%). Negotiation is still dominated by middle (44.4%) and high (44.4%) level. A few students shown middle level of transactive memory (16.7%) and the number of students performing low level of responsibility initiative is decreasing compared to previous lesson as it increase in middle (44.4%) and high (27.8%) level.

During testing the prototype and redesign, only 50% students shown high level of perseverance, the rest is in middle level. Both elements of perspective taking is somewhat dominated by middle level performer. 61.1%

students show high level of negotiation during testing and 55.6% students show low level of negotiation during redesign. There were evident of self-evaluation (low 11.1%; middle 16.7%) and transactive memory (11.1%) during testing, but none during redesign. 44.4% students shown high level of responsibility initiatives while the rest are in middle (27.8%) and low (16.7%) level.

Students' average score on each element of collaboration skills indicate that the highest performance of action occurred during testing and redesign (0.96). All of students perform highest level of interaction during constructing, testing and redesigning. Perseverance best performed during designing (0.94) and constructing (0.94). The highest average score for adaptive responsiveness (0.80), audience awareness (0.80) and negotiation (0.85) found in designing. Responsibility initiatives best performed during redesign (0.69). The elements of collaboration skills with least score were self-evaluation (highest: 0.15 during testing) and transactive memory (highest: 0.11 during constructing).

Discussion

The results indicate that within engineering design activity, high degree of students' participations is evident throughout the lesson. This implies that students were actively engaged in the lesson by doing activities within environment, interacting with others, responding to the contributions of others as well as shows perseverance in undertaking and completing the task.

Perspective taking skills were also observable along the lesson, where the highest degree of both adaptive responsiveness and audience awareness were found in designing prototype. It is because during this engineering design process, students have opportunity to express their ideas to other, accept others' ideas and some students were even able to adapt and incorporate those ideas to suggest the best design for their solution. From the recording it is also found that students often asked for further clarification when they are trying to understand other's ideas. As Hesse et al (2015) describe, "responding skills become apparent when problem solver manage to integrate contributions of collaborators into their own thoughts and actions".

From the observation it is also found that when a student asked for clarification of ideas to other, it will enable other student to perform audience awareness skills by making sure that their utterance or action can be understood by their collaborating partner. Yet, when a student ignored ideas of other, there is no opportunity for the other students to express ideas in details, making them lies in low level of audience awareness. Thus, this finding suggests that somehow individual collaboration skills are dependent upon skills of collaborating partner.

In terms of social regulation skills, responsibility initiative elements were observable in every meeting. This finding suggests that during engineering design activity students were able to take responsibility for working on a shared problem representation, developing plan toward solution and regularly monitor group progress.

Differently, negotiations were absent during identifying problem and developing solution process. This is happened because during these two engineering design processes, teacher did not provide opportunity for group discussion. Instead, teacher led whole class discussion to help students identify the problem and its possible solution. Sample of problem statement and solution were written on the white board which may cause students to use it as their answer without further negotiation. Teacher led whole class discussion instead of group discussion because the students were still have difficulties in identifying the problem by themselves. Thus teacher guidance is needed. The same thing happened during brainstorming possible solutions.

On the other hand, during the rest of the engineering design processes, students performed high degree of negotiation. It may be explained by the fact that during designing, constructing, testing and redesigning, students often come up with diverse opinions and strategies that rise conflict among group members. As conflict arises

students are pushed to negotiate the steps and measures that accommodate the differences between individual approaches (Hesse et al, 2015).

Self-evaluation and transactive memory were not identified as much as other skills. Students may recognize his or her own and others' strengths and weaknesses through communication (Wegner, 1986) during collaborative work. However without making utterance acknowledging those strengths and weaknesses, these two skills were not observable. Thus it can be inferred that this engineering activities somehow did not accommodate all students to express group diversity in terms of one's and others' knowledge, strengths and weaknesses.

Conclusion and Recommendation

Based on the analysis of the findings we confidently suggest that varied level of collaboration skills are evident throughout science lesson incorporating engineering design activity. This is due to the nature of engineering activity which provides students with debatable content where varied perspectives exist. Moreover, individual collaboration skills are dependent upon skills of collaborating partner as there is interdependence among group members.

In addition, for further relevant studies we suggests to exposed students to problems which is contextual and relatable to their life to make them easier in identifying the main problems as it is a crucial part to begin the activity. Thus, students can engaged in group discussion instead of class discussion led by teacher that may enable them to perform negotiation. Nonetheless, we do hope that this study prompts future work to shed light on how engineering design activities in science lesson may foster collaboration skills as an essential 21st century skills when compared to other activities.

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