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The Role of Interim Housing Community Organizations in Reconstruction of the Community: A Case Study of Jongchan Base in Pingtung, Taiwan

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Interim housing is temporary housing for those people affected by disasters. It is administered by the government or private sectors as it means to meet the needs of disaster survivors. Due to the impermanence and lack of newsworthiness, interim housing usually gets less public attention in comparison with sheltering and permanent housing. Interim housing, however, is only a step away from reconstruction of original communities or relocation. Whether for both victimized communities and local government, many decisions need to be made during this intermediate period. This case study looks into the following facts: (1) How will the decisions being made affect the relationship between the residents of interim housing and the authority structure of the original community? (2) Is there any formation of new authority structure among residents in the interim period? (3) Does the new authority structure, if established, have an impact on choice over reconstruction or relocation? and (4) How do public and private sectors' decision-making wheel the formation and decision-making of the organization among residents of the interim housing? Through a literature review, interviews with representatives of residents in interim housing and public/private sectors, to analyze the factors which affect organization formation and decision-making process during the stage of interim housing. While, unpredictable disasters may happen anytime. Hopefully, this case study could offer an experience-based and valuable piece of information that helps public and private sectors make right decisions on disaster management.

Keywords: social work on disaster relief and reconstruction, interim housing, community work, decision-making

Introduction

Typhoon Morakot dumped record rainfall as it crossed Southern Taiwan on August 8, 2009. The torrential rains it brought caused serious flooding and triggered enormous landslides, and several villages were washed away in the mountain area by mudslides. This disaster had been referred as the "88 Flood". It destroyed nearly 1,700 homes, and 160,000 more were reported to have sustained damage. It was estimated that at least 600

people were believed dead and thousands more have been affected (MOI (Ministry of Interior), 2009).

The Typhoon Morakot wrought catastrophic damage in Taiwan, especially in indigenous communities. Many of these villages were located in an environmentally fragile region. After the typhoon, they were confirmed to have been moved to safety zone. To deal with the aftermath, public and private sectors enacted rescue and reconstruction plans almost simultaneously. Extensive amount of resources were allocated to post-disaster reconstruction. Intensive discussions among different sectors in Taiwanese society were, however, also triggered by the complexity of reconstruction and relocation decisions involving indigenous culture and social issues.

In general, providing appropriate housing to survivors is a primary issue to solve after serious disaster. Based on the reconstruction after Hurricane Katrina in the United States of America, the US FEMA (Federal Emergency Management Agency, 2009) published a new guideline, NDHS (National Disaster Housing Strategy), for delivering housing to disaster survivors. The guideline categorizes housing into three types according to periodic evolution of disasters: sheltering, interim housing, and permanent housing. In most cases, after disasters happen, residents who were able to return to their homes in a short period of time only need shelters. When more serious disasters happen, homes or communities are generally damaged or destroyed, survivors, therefore, have longer housing needs. This is when interim housing and permanent housing come into play. According to NDHS (FEMA, 2009), interim housing is designed for up to 18-month stay, but may be used longer when the communities are seriously damaged or supply for rental housing is limited.

In Taiwan, on the contrary, interim housing has an appearance of a temporary solution in the intermediate phase of the whole reconstruction process. Its design and operation attract less attention in comparison with newsworthy sheltering and local politics involved in permanent housing. As a consequence, Taiwanese government official announced that the primary goal of post-Morakot reconstruction is to provide permanent housing for the surviving communities. But still, three communities, Chaozhou, Mudan in Pingtung county, and Dawu in Taitung county had only interim housing option in February 2011, 18 months after Typhoon Morakot.

In fact, interim housing functions more than a temporary solution. Nonetheless, it is also a starting point where survivors rebuild their home, communities, and future. NDHS defines delivery of disaster housing, no matter what stage it belongs to, as a process that should be community-oriented and supportive to victimized individuals, households, and communities for returning to normal. Delivery of interim housing should come with systems that help residents rebuild their society network, based on participation and coordination of both public and private sectors. Providing interim housing is an opportunity encouraging residents to gather together and deal with common issues that affect each individual and household.

This case study focuses on the role of interim housing community organizations in reconstruction of the community. Based on the observations of interim housing operations in Jongchan base located at Chaozhou, Pingtung, which take in the most survivors from post-Morakot.

Literature Review

Relocation With Crisis of Losing Roots of Culture and Livelihood—The Issue of New Permanent Housing

Taiwanese indigenous communities were the major victimized communities after Typhoon Morakot. According to the report from MOI (2009), one third of the damaged communities caused by Typhoon Morakot

were indigenous communities. Those indigenous communities include 30 communities[1] located in mountain area and 25 communities[2] in plain area. In addition, 80 indigenous communities need safety evaluation. Twenty-eight of the 80 communities were uninhabitable and categorized as special area, another 32 indigenous communities were inhabitable but required safety alert, categorized as alert area (Chuan, 2010).

The legislation of SSRPTM (Special Statute for Reconstruction for Post-Typhoon Morakot) was made on August 28, 2009. SSRPTM Article 2[3] shaped the reconstruction as "…based on humanity, life-oriented, and respectful to multicultural features, guaranteed to community involvement, and also involved with territory security and environment protection…". Article 20 also mentioned "…reconstruction plans should show respect to local residents, communities, tribes, their culture and ways of life…". SSRPTM pointed out the principle of respect. However, there were limited involvements of indigenous communities, who are the major victims during the process of legislation. Since the hasty of the legislation and lack of discussion, this statute became a major target of protests and fierce objections.

Relocation—Disappearance of tribal tradition that connects land and culture. As Omi (2012) stated what the World Council of Indigenous Peoples noted in 1985, "Next to shooting indigenous peoples, the surest way to kill us is to separate us from our part of the earth". Forcing indigenous people to leave their land, breaking the connection between members in a tribe, and tearing apart the consolidation of a cultural population, all these bring an endless sorrow to Taiwanese indigenous people (Taiwan Indigenous Tribes Action League, 2009). Both the international human right standard and the domestic regulation emphasize that the relationship between indigenous people and their land is vital to their culture and existence (Tsai, 2009).

In SSRPTM, the part that human right groups and residents in disaster area concern the most is the requirement of mandatory relocation[4]. In three months after the disaster, tribes in disaster area gathered to protest several times, and demanded "stop labeling special area; start initiating interim housing; and release of information, involvement of residents, as well as respect for residents' choice".

Taiwan Indigenous Tribes Action League (2009) considered the lack of interim housing option represents the government's neglect of indigenous people's needs for their homeland. Chia-Ming Hong, village chief of Laiyi (Pingtung county) also pointed out "The relocation is only a solution for safety issues, there is no solution for residents' property and livelihood comes with it" (Lee, 2010). People in tribes thought that they just need interim housing to stay and would return to their homeland. Now, they worry about relocation, which means that they will never go back to their homeland. Moreover, the agreement of receiving free, which means

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[1] Wulai Township, Taipei County; Fuxing Township, Taoyuan County; Jianshi Township, Wufeng Township, Hsinchu County; Taian Township, Miaoli County; Heping Township, Taichung County; Xinyi Township, Renai Township, Nantou County; Alishan Township, Chiayi County; Taoyuan Township, Namaxia Township, Maolin Township, Kaohsiung County; Sandimen Township, Majia Township, Wutai Township, Mudan Township, Laiyi Township, Taiwu Township, Chunri Township, Shizi Township, Pingtung County; Daren Township, Jinfeng Township, Yanping Township, Haiduan Township, Lanyu Township, Taitung County; Zhuoxi Township, Xiulin Township, Wanrong Township, Hualien County; and Datong Township, Nanao Township, Yilan County.

[2] Guanxi Township, Hsinchu County; Nanzhuang Township, Shitan Township, Miaoli County; Yuchi Township, Nantou County; Manzhou Township, Pingtung County; Hualien City, Guangfu Township, Ruisui Township, Fengbin Township, Jian Township, Shoufeng Township, Fenglin Township, Yuli Township, Xincheng Township, Fuli Township, Hualien County; and Taitung City, Chenggong Township, Guanshan Township, Dawu Township, Taimali Township, Beinan Township, Donghe Township, Changbin Township, Luye Township, Chishang Township, Taitung County.

[3] SSRPTM Article 2: Reconstruction should base on humanity, life-oriented, and respectful to multicultural features, guaranteed to community involvement, and also involved with territory security and environment protection.

[4] SSRPTM Article 20: Reconstruction plans should show respect to local residents, communities, tribes, their culture and ways of life.

permanent housing comes with a price, the restriction of the agreement makes it impossible for tribes to go back home[5].

Tourism-oriented permanent housing—Reconstruction according to the stereotype of indigenous people. SSRPTM guides the reconstruction work to take community culture and ways of living into consideration. Since victimized communities were mostly indigenous tribes, the NGOs (non-governmental organizations) that conducted reconstruction almost incorporated indigenous symbols everywhere in the design of permanent housing. This reflects the common stereotype of indigenous people shared by the majority of Taiwanese. For example, building stages in public area of permanent housing was considered as a way for indigenous people to perform traditional dancing to attract tourists.

Permanent housing site in Shanling, Kaohsiung is where this kind of dispute began, and similar dispute also happened in Wutai, Pingtung. Lukai clan concerned a lot about the plan of their permanent housing, freedom of religion, and pacts for stay in the permanent housing. Lukai wanted to communicate with NGOs to make the plan work for Lukai. But the NGO in charge responded that the option for changing that plan is limited. Moreover, the planner claimed that "I watched their documentary. I know their life in tribes". Based on the knowledge from a documentary, Tzuchi (a Buddhism NGO) provided a space where "your people can dance every Saturday night". Lukai considered this as an extreme misunderstanding of their culture (Kou, 2010).

Chou clan in Ali Mountain faced the same situation. Chuan-May Cheng, commissioner of Louye 88 New Home denounced a similar plan for her community and said "my people worry about that they are moving to a zoo for display". The plan, initiated by Chiayi county government and Bureau of Tourism, would build a permanent housing at Luzai, Chiayi into the International Chou Tourism Tribe, which comprising performance stages and traditional man-gathering places. You-Fu Chen, vice-president of Laiji Self-help Group, believed that Chiayi county government wanted to transform Luzai permanent housing into a display tribe, to cage Chou clan for tourism (Chong, 2010a).

Religious conflicts—Permanent housing that deprives freedom of religion. After Tzuchi completed constructions of permanent housing one after another, the religious tension between Christian tribes and this Buddhism NGO was more real to tribe members.

Wang (2010) posted in his blog that "Daai villages, which refer to permanent housing build by Tzuchi, are a display of Tzuchi's culture". When the permanent housing and streets around the site are all named according to the icons in Buddhism world, residents will never feel this is their home. They are reminded that this is a different world day to day. They will always feel being the receivers and are not able to help themselves.

Residents in the Daai Villages worry about the management from Tzuchi in the future. There is always "advice for your good" from Tzuchi members. Also, in the self-government committee, all committee members are influenced by Tzuchi. Residents who moved in on February 10, 2010 were called to gather in the on-site Christian church for a live broadcasting of Buddhism preach lesson (Chong, 2010b).

Fang (2010), a resident of a Daai village expressed and pointed out the different religion and culture among NGOs with indigenous people on the Internet. Those differences make indigenous people feel the pain of being colonized again.

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[5] In the Article 6 from the grant agreement of permanent housing build by private sectors for post-Morakot reconstruction: Resident and their spouses with lineal relative family members who living together should agree to obtain residential ownership within three months from the date they vacate their original places, and shall not return to their original places to live and build houses.

Habitat Post-Disaster and Community Involvement

There was a history of individuals or groups of people, involuntary or voluntary, migrating from places to places in Taiwan. Reasons for individual migrating include the need for study, searching for a better life, or even a change of personal value. On the other hand, migration of groups can contribute to political, economical, or safety reasons. Among those migrating with purposes bound to political reasons, one important example is 10-Year Kaoshal Clan Migration Plan during Japanese colonization of Taiwan history; there are also examples of migration due to economic purposes, such as Balang tribe's relocation for construction of Wanda Dam, and community relocation plans related to expansion of Kaohsiung harbor (Shieh, Chang, Tsai, & Wang, 2008). Today, relocation or migration can only be seen as safety reasons because of changes in Taiwanese society and maturity of democracy. In the case of relocation for safety, there are more and more studies relative to community involvement and communication between resident organizations and governments.

Since the number of studies regarding interim housing and community involvement are relatively small in comparison with sheltering and permanent housing. On the same subject, therefore, first start off a review on some of the studies focused on community involvement during sheltering and permanent housing stages.

Habitat post-disaster—From placement to reconstruction. PSS21EDR (Provisional Statute for September 21 Earthquakes Disasters Reconstruction), DDVPHR (Decree for Disasters Victims Placement and Houses Reconstruction), and SSRPTM are the regulations regarding post-disaster reconstruction in Taiwan. Among them, the DDVPHR, issued in May 2005, is the one that Taiwanese government agencies in most disaster situations will refer to. DDVPHR, a decree without legislature, contains the basic principles and procedures for governmental operations in all post-disaster reconstructions (MOI, 2005).

DDVPHR regulates the placement of disaster survivors during short, intermediate, and long term; evaluates the safety of buildings and communities affected by disasters; and aids in reconstruction for disaster survivors in inhabitable area and relocation for disaster survivors in uninhabitable area (Ke, 2009).

NDHS, the US counterpart of DDVPHR, also defines three different stages of housing needs for disaster survivors: sheltering, interim housing, and permanent housing.

There is a fair number of researches focusing on sheltering. Omar, Khaled, and Amr (2008) presented a multi-objective optimization model for temporary housing arrangements after earthquake or tsunami, forms including: (1) manufactured housing, such as travel trailers and mobile homes; (2) leased hotels and motels; (3) cash grants for temporary housing rental assistance; (4) public housing units; and (5) use of military facilities.

The model (Omar et al., 2008) is developed using weighted linear programming, and this model is capable of optimizing four possibly conflicting objectives, namely: (1) minimizing negative socioeconomic impacts on displaced families; (2) maximizing safety of displaced families; (3) minimizing adverse environmental impacts; and (4) minimizing total public expenditures.

The model was used to analyze and optimize a case study of temporary housing arrangements after the 1994 Northridge earthquake. The analysis of this case study illustrates the potential use of the model by emergency management agencies and demonstrates its capabilities to optimize temporary housing arrangements after earthquakes and other natural disasters (Omar et al., 2008).

By comparing the NDHS and DDVPHR, it appears that the main discussion and focus of disaster housing at national level is sheltering and permanent housing rather than interim housing. The conclusion is drawn from that the rental properties are the only options of interim housing in Taiwan according to DDVPHR, and also from the similar fact that rental properties are the solutions with the highest priority, unless there are other

limitations for interim housing in the US (see Table 1).

Table 1

Comparision between Decree for Disaster Victim Placement and House Reconstruction and National Disaster Housing Strategy

	Decree for disaster victim placement and house reconstruction	National disaster housing strategy
Short term (Sheltering)	(1) Local governments should use public buildings, such as schools, temples, and community centers that meet safety standard as shelters to accommodate disaster survivors, and provide them with necessary supplies; (2) When it is necessary, local governments should request NGOs to send social workers to assist disaster survivors; (3) Time duration of short term is defined as two weeks up to a month.	(1) In most cases, shelter residents are able to return home within few hours to several days; (2) The plans should include accommodations for the general population and those with special needs, including persons who are elderly or those who have disabilities; (3) Shelters serve multiple purposes. Not only just to provide temporary refuge, but also offer a place for families and households to reunite, register for disaster assistance, and obtain updates regarding damages, casualties, and response and recovery efforts.
Medium term (Interim housing)	(1) Financial assistance, funded by donation from private sectors, as which interim housing rental will be managed by local governments; (2) Financial assistance for interim housing rental can last for at least six month, but no more than 24 months; (3) Definition of beneficiary: home owner(s) who live in the house when disasters happen. Confirmation from village chief is required. (4) Amount of financial assistance: NTD $6,000 for home with three persons; NTD $8,000 for home with four persons; NTD $10,000 for home with five persons. (5) Local governments should provide one-stop-shopping service for survivors to apply for social benefits, covering housing, education, and healthcare.	(1) Generally, this period may span from the day after the disaster to approximately 18 months. In major disasters where damage to the housing infrastructure is substantial, or in rural areas where rental housing is limited, this period may be longer; (2) Interim housing extends well beyond simply just to provide a structure; (3) Interim housing must be safe, secure, and accessible; (4) Provide the actual structures to disaster survivors during this interim period are challenging. Use of rental properties is the simplest and, in many ways, the best option for interim housing. However, if the damage to the community's infrastructure is more significant or the venue is rural and rental property is unavailable, other options must be considered.
Long term (Permanent housing)	(1) Indigenous tribes in remote area (a) Reconstruction; (b) Relocation. (2) General area (a) Reconstruction; (b) Rental or procurement.	(1) Many factors affect the process of attaining permanent housing. Current practices in permanent housing focus on three distinct groups: renters, homeowners, and landlords; (2) For individuals and local governments, the most difficult decision is whether or not to rebuild in the original place. Some decisions may have national impacts on economic sectors at national level. The local government's decision not to rebuild an area must be made rapidly, as individuals often begin rebuilding quickly; (3) There is no "one size fits all" strategy for permanent housing, some principles include: (a) Rebuilding usually takes longer than people would like; (b) Individual and community preparedness before a disaster strikes is essential to post-disaster housing recovery; (c) Repaired or replacement housing should be better than the house it replaces and be adequately insured; (d) Some interim housing solutions can become permanent housing; (e) Catastrophic incidents require extra coordination and resources to achieve permanent housing; (f) Identify clusters of permanent housing opportunities can speed up and enhance recovery.

An ideal case of rebuilding destroyed houses—Nias' experience. In addition to the Northridge case in the previous section, the experience at Nias Island in Indonesia is also a case of post-disaster reconstruction. After tsunami in 2004 and a major earthquake in 2005, many homes and communities at Nias were destroyed. A community-oriented reconstruction plan was conducted as an experiment. To meet the needs of housing, this plan embedded a community-involved process, providing an on hands knowledge of construction management and safe construction methods, and furthermore, self-esteem. Lang (2008) found that in Nias' case, the demand for emergency help varied from time to time, and after the emergency period, which lasted about 6 months, the need for housing reconstruction begins.

Globally, as well as in Indonesia, experiences have shown that community-based recovery strategies under most circumstances involve more affected people in self-recovery, and are more likely to lead to sustainable solutions than that top-down strategies can achieve. This is because of an increase in communities' ownership to the project and as argued by Turner (1976) in his work on housing the poor in Peru in the 1960s and 1970s. When homeowners are allowed to contribute to the design, construction, and management of their own houses, flexibility, self-sufficiency, and community initiative make deficiencies and imperfections more tolerable to the dwellers. Waites (2000) added other important reasons for community involvement, i.e., willingness for providing additional resources, increased communities' capacity in decision-making, sense of togetherness, confidence, capability, and ability to cooperate. Furthermore, design solutions are more likely to be in tune with what is needed and what is wanted. With community involvement, people gain a better understanding of the options realistically available and are likely to start thinking positively rather than negatively. Time-wasting conflict can be avoided and speedy development can be achieved.

Although, culture is not as highly sensitive as ritual matters, such as in Indonesia, local custom and tradition in home building play a major role in life on Nias islands. This mode of housing production, i.e., involvement of community in housing provision has increased levels of satisfaction amongst beneficiaries.

Lang (2008) found that in addition to the plan's core intention, some lessons were learned in Nias' case. Determination of required assistance by the communities has not been exercised in the projects, and it could affect reconstruction in many ways. This has always been the case when donors go out to the community with a ready-made program, based on their own analysis. The form of technical assistance was often determined by the government. All these have affected the flow of project implementation.

Community organization and post-disaster reconstruction. In discussions of resilience of communities against disaster, many people would refer to the concept that "whole is more than the sum of its parts", meaning that individuals would benefit from community's recovery. Ability of an individual to adapt builds up this individual's resilience, and ability of a community's social network to adapt builds up the community's resilience, including better group activities, decision-making, efficacy, and ability (Fran, Susan, Betty, Karen, & Rose, 2008).

The implementation of reconstruction policy, especially the parts about community reconstruction, is heavily affected by the community organizations. In the research "Understanding Local Policy Making: Policy Elites' Perceptions of Local Agenda Setting and Alternative Policy Selection", Liu, Lindquist, Vedlitz, and Vincent (2010) suggested that consensus- and coalition- building are perceived as the most important political factors in local policy processes.

Perry and Lindell (1997) analyzed the experience of Allenville, Arizona, in which relocation was decided by the Board of ACP (Allenville Citizens for Progress), the most powerful organization in the community. The

authors considered that the decision is the main reason for the relocation's success.

In that research, some principles of a successful relocation were noted: (1) An organization that is accepted by residents as well as government authority; (2) All residents who will move must attend the decision-making process; (3) Residents must understand there will be more than one community organization, each serves different purposes; (4) Understanding of residents' personal and social needs, including structure of interim housing, economic status; (5) Maintaining of social network; and (6) Consideration for ethnic, cultural or economic minority (Perry & Lindell, 1997).

Shieh et al. (2008) examined the issues related to disaster relocation and suggested that: (1) Learning to respect for residents' willing to relocate; (2) Enhancing internal organizational abilities; (3) Making clear distinctions between rights and obligations; (4) Establishing mechanisms for coordination; (5) Resolving issues about emergency financial aids; (6) Building funding sources other than donation; (7) Resolving problems regarding land acquisition; and (8) Activating multi-purpose fund. Among these suggestions, six out of eight are related to organization competence.

The traditional social rank and authority structures of Paiwan society. Paiwan has a strict traditional social rank system, in which caste system is insurmountable in particular; chiefs, nobles, warriors, and civilians of their traditional social class system. Chiefs hold the management rights of the land, plant, and animal resources. In this hierarchy, the aristocracy can accept contribution from tribal people, but also responsible for protecting people in the tribe, negotiation, and helping minority groups (Hsieh, 2007).

Under the caste system, the traditional social rank structure of Paiwan is primogeniture as the core extending out to "home", "family", and "tribal" hierarchical system (Hsieh, 2007). The degree of kinship in Paiwan clan is neither to follow patrilineality nor matrilineality, but base on the primogeniture inheritance (Kuo, 2003).

This traditional authority structure after the Japanese occupation era to the government of the republic of the national system of governance, and faced with the question whether the post-migration plays a significant role, are also worth exploring.

Research Method

The Research Object

In this case study, the main research areas are the interim housing in Jongchan base that is located at Chaozhou, Pingtung. The principal object of this case study would be management commission of the placement center and various NGOs.

The Research Design

Interviews and participative observation were employed in this case study.

Participants' observation. This case study looks into the interactions among all households in interim housing with the management commission and the government/private agencies. The permission obtained from the management commission to participate in the management commission meeting, and residents' meeting provides a great observation to understand the operation of the management commission. Three management commission meetings were participated (Nov. 14, 2010; Feb. 18, 2011; and Mar. 2, 2011), plus one residents' meeting (Feb. 18, 2011) and two joint meetings for Jongchan base interim resettlement center (Nov. 11, 2010 and Mar. 3, 2011). Moreover, by participating tribal activities, observe the working situation after the

management commission members returned to their tribes, being involved in the development association operation, and understanding the management commissions' functioning relationship between the tribal organization and the placement center.

Interviews. In order to obtain opinions from interviewees that regarding organizational operation of the interim housing community, this case study interviews members of the management commission, the social workers in county Department of Social Affairs, Red Cross staff, and some residents. Using the semi-structured questionnaire of open-ended questions to ask respondents opinion in regards to the transit of the traditional authority structure after the disasters and during the interim period, the interim housing organization formation and operation, and the relationship with the various service providers. The background of interviewees is listed in Table 2.

Table 2

Background of Interviewees

Interviewee	Gender	Identity/Occupation	Interview date
S	Male	County government local worker	Nov. 29, 2010 Feb. 18, 2011
M	Female	Management commission member/Tribal Development Association staff	Jan. 28, 2011
E	Female	Local civil society worker	Feb. 15, 2011

Research Results

Background of Jongchan Base

Establishment of intermediate placement center. On the first meeting of MPDRC (Morakot Post-Disaster Reconstruction Council) on August 16, 2009, Ching-Te Oh, CEO (chief executive officer) of THSR (Taiwan High Speed Rail) and a member of MPDRC suggested that disaster survivors who needed placement service was relatively small in terms of number, and the government should assist them to promptly return to normal life. Chau-Shuan Liu, the president of MPDRC decided that "for placement of disaster survivors, an investigation regarding their needs should be conducted, and multiple methods of delivery of housing should be designed for future reference during implementation".

According to this decision, Pingtung county government led the Red Cross Society of the People's Republic of China, Armaments Bureau of Department of National Defense, and the residents of Laiyi village to Jongchan military base (Jongchan military base was originally build for 28 brigade artillery battalion. The total area is near to 6.35 hectare, and there are 41 buildings inside the base. The army moved out from the base in 2006). This visit was arranged for the residents of Laiyi to have the knowledge of the environment of the base. Agreement of using Jongchan as an intermediate placement center (or the interim housing campus) was made on August 19, 2009, the same day of the visit. The necessary information regarding Jongchan base was also provided to Pingtung county government by the military on the same day (Red Cross, 2009).

On August 21, 2009, volunteer workers from Red Cross stated to organize the environment of the base. Because the capacity of original buildings in the base was not enough, THSR provided construction assistance for building temporary housing. The capacity was increased to accommodate 111 households. Most of the living spaces are three bedrooms and 11 of them are studios for singles. In addition, household furniture provided by IKEA, including bedroom furniture, clothes organizers, and storage. Red Cross was responsible for the maintenance of Jongchan base and its financial issues (Red Cross, 2009).

The residents started moving in on December 30, 2009, and the ritual of moving in was made in January 2010. According to the statistic data in 2010, these 111 housings were comprised of 44 households from Taiwu and 67 households from Laiyi.

Service providers in Jongchan base. After the establishment of placement center, Pingtung county government and Red Cross signed a memorandum, in which Red Cross was responsible for providing fulltime on-site employees to manage general operation affairs of the center. And later, Red Cross also brought in another NGO, Jieh-Huey Social Welfare and Charity Foundation, to provide mental health service.

In February 2010, MOI finalized the selection of operators of centers for reconstructions. Two NGOs, Jieh-Huey Social Welfare and Charity Foundation and Taiwan Transactional Analysis Association were awarded the contracts serving Laiyi and Taiwu (see Table 3).

Table 3

Service Providers in Jongchan Base in 2010

	Red Cross Society of the People's Republic of China	Jieh-Huey Social Welfare and Charity Foundation	Laiyi Centers for Reconstruction (Taiwan Transactional Analysis Association)	Taiwu Centers for Reconstruction (Jieh-Huey Social Welfare and Charity Foundation)
Authority	Pingtung county government	Red Cross Society of the Republic of China	MOI	MOI
Service content	Management of general affairs	Social welfare related work	Mental health, education referral, employment referral, welfare referral, and others	

The Authority Structure in Jongchan Base

Pre-disaster Authority Structure. Jongchan base consists of residents from five tribes, including Taiwu from Taiwu village, and Laiyi, Danling, Yiling, as well as Dahou from Laiyi village.

These two villages, Laiyi and Taiwu, consist of residents that belong to Paiwan clan, in which members obey a strict rank system. A chief of a tribe is not only a spiritual leader, but also a political leader with the highest rank. Tribal commission is an important decision-making process.

In addition to traditional tribal organization in each village jurisdiction, there were also elected village chiefs and associations, such as Laiyi Community Development Association and Taiwu Community Development Association. In Laiyi, the village chief is also an important member in both Laiyi Community Development Association and Laiyi Tribe Development Association. This echoes Perry and Lindell (1997) that there are multiple organizations in a community.

Intermediate placement center's management commission and organizations in the original village do not have intensive connection; it is estimated that traditional authority of chief of tribe and village chief will have an impact on the authority structure after moving in.

> Our list of commission members does not have many tribal leaders, however, Laiyi has; one of their commission members is tribe chief. Unless the tribe is going to have a tribal meeting, chiefs have their authority. After moving in a new place, it is major and permanent, so, authority of tradition, authority of religion, and authority of politics all come in… The authority, village chief comes for it, presidents of associations come for it, then, the story will be fierce. (S)

Among these positions, village chief has the most awkward position.

> There is a communication meeting held in the county government every month; village chiefs need to attend. Though, management committee thinks it had the right, however, it does not. Village chiefs need to do their part in the procedure, attending and bring their stamps... Mine is written and done... Once in a meeting, we said something offending, a political leader in Red Cross stood up and replied "if you guys do not need us, we can leave from that area!" Oh…that is serious!

We thought it was bad. (M)

In the original jurisdiction, a village chief works for every member in the village. The intermediate placement center is not in the physical range of the village, and this made it hard for a village chief to do their work.

There is a connection between community development association and centers for reconstruction, because the association is a window that the centers for reconstruction could apply for equipments.

The composition of management commission—Proportional and equally balanced. Besides the services provided from the county government, the Red Cross and Jieh-Huey Social Welfare and Charity Foundation in the placement centers, those residents were also established a management commission with the assistance of the county government and the Red Cross, shortly after living in the interim house, whose members also take into account the demographic composition of the interim housing residents. The management commission is not only a formally registered organization, but also a communication platform to promote residents and management (services) unit.

The Residents' Management Commission is also an organization involving authority structure. The proportion and balance among different villages is a hard thing to decide. There is no census in how to decide the proportion. The process for generation of commission members was different in 2010 than in 2011.

> In the beginning, Taiwu and Laiyi, each had nine members in the committee. (M)
> Laiyi village had Laiyi, Danling, Yiling, and Dahou tribes moving in, so one tribe one representative. Taiwu village does not have tribes other than Taiwu tribe. So, maybe, the proportion will be different from this year. Laiyi will have higher proportion. (E)

In 2010, Laiyi and Taiwu, both had nine members in the commission. It was planning to give more seats to Laiyi in 2011, but under the consideration of effects on Taiwu village, the proportion maintained the same. However, a senior officer in Taiwu village office decided that Taiwu needs only four seats, so the result is 10 to four.

After the management commission established, it has an authority to decide what can influence their community life (see next section). However, what can determine the composition of the management commission? From two years of different experiences, the management unit (Red Cross) and government departments (township offices) play a role in its effect.

The interaction among the commission and other organizations—Issues related to subjectivity. Many organizations, such as county government, township offices, the Red Cross Society of the People's Republic of China, etc., play different roles in the formation of the commission. Generally, commission is the most important role of decision-making in the resettlement center.

> Commission is a major decision-maker; however, I feel that it consulted representatives and village chiefs before making decisions. Besides, decisions which it made only apply to Jongchan base. (E)
> More people from Laiyi are more active since there are three to four tribes from Laiyi. They concern their benefits by verbally demanding their commissioners to get involved to a certain degree, so that information related to their benefits could be passed out and in. (E)

Both officers and employees allocated by county government and the Red Cross Society of the People's Republic of China put inhabitants' opinions as the first priority and respected inhabitants' decisions.

> We have advised the Red Cross Society of the People's Republic of China to be flexible when things were tolerable.

We tried our best to communicate with the commissioners, or convinced them if needed. We made crystal clarification on the instant; therefore, we always have the space for negotiations and time for convincement. Basically, county government respected the Red Cross Society of the People's Republic of China, since the authorization was made and officers of county government worked in Jongchan base only twice or thrice per week. (S)

On the premise of respecting to the commission, the Red Cross Society of the People's Republic of China was authorized by county government to manage Jongchan base at the first moment of post-disaster rehabilitation. The Red Cross Society of the People's Republic of China played an important role in Jongchan base. These researchers joined the inhabitants meeting and commission, and observed the agenda of the meetings that were arranged by the Red Cross Society of the People's Republic of China. NGOs or academic institutions planning to serve or research in Jongchan base needed to contact the Red Cross Society of the People's Republic of China before being discussed in the commission, which made decisions of approval or disapproval.

In the commission of Jongchan base, most of commissioners were middle-aged and own an educational background of senior high or above. They performed well comprehensibility and understood the process of communication, as well as reading proposals. Affairs could be done quickly and agreements could be made efficiently. So far, no rupture within the commission had happened. (S)

The issue in different categories that management commission of the placement center is concerned with. Compiled the meeting records from 2010 to 2011, there were 12 management commission meetings that took place in the placement center. The discussed issues in the meeting records can be grouped into the following four categories:

(1) Maintenance and repair of public area: The improvement of premises within the gutter, house repairs inside the placement center, and the road sign settings;

(2) Placement center's security management and related regulations: Setting household conventions to discuss how to maintain community order and regulate tasks and rights of the safety patrol team;

(3) External resource collection: Supplies, funds allocated and used from other civil society parties; agreeable on case study and festival handling;

(4) Information transmitted and connected within public sectors: Central and local governments convey information about redevelopment, including subsidy messages, permanent housing, and progress.

From the issues discussed by the management commission, it can be seen that everyone inside the placement center is still closely linked to the everyday life of the community, as well as expectations of the future residence environment.

Research Findings

The Appropriateness of Rehabilitation Plan Made by Public Sector Affects the Operation of Commissions and Resettlement Centers. Resettlement centers are designated to deal with reconstruction of post-disaster. Managerially, the appropriateness of the operational design of resettlement centers affects inhabitants and commissions. For example, registration and then draw lots were used in deciding who were eligible to move-in from Laiyi in 2010. Next year, examination was adopted due to the increase of applications. People were more aware of the need of shelters during the flood period. This change caused great discussions and controversies, even the formation of commissions were reconsidered in the second year.

In the first year, the tribe of Laiyi was cautious about resettlement centers. A question mark existed in people's mind.

> I did not come at that moment. I heard some people said that not many people wants to move in here. People who wanted to move here were chosen by draw lots. Those who were drawn could move into the resettlement center. After strike of Typhoon Fanapi, people felt that they need a shelter during the rainy season. The increasing need of shelters caused the problem of move-in. (E)

Civil societies and public sectors' impact to the consciousness cohesion of interim placement centers and community organizations. Since the special identity and specificity as "resettlement", the public sectors provide special services to the residents of the placement center than compared to the general public. Not only commissioned by civil society groups to service in the placement center, but also stationed by the public sectors to provide services on behalf of and links related resources.

If providing such resources made residents dependent, did the resource providers staying in placement center weaken the autonomy of community organization and the coherence of sense of community in the placement center?

Hereafter, two townships moved into permanent house, community's organizational operation and continued services to permanent house interacting with civil society groups which will continue to be focused on.

The tension between the commission and the original community needs to be observed in the future. The issue of resettlement caused by Typhoon Morakot divided the tribe into two parts, the native land and resettlement centers, and formed a new interpersonal and organizational relationship.

> In the beginning, people who decided to move, I meant Namasia, came back to native land. People who stayed in native land threatened to release biting dogs. The rupture definitely existed between people staying in hometown and those leaving to permanent houses. (E)
>
> Seemingly, people were easy-going. Some people were sneering at whoever mentioned about resettlement center. Some people said, "I am not in the mood of talking about that", "That is the decision of community", or "I have moved out". (M)
>
> Only half the people of Laiyi and Taiwu moved into Jongchan base. None of the decisions related to Laiyi tribe was made in Jongchan base, but in the native land. Even the public sector followed this rule. The half people of Laiyi who moved into Jongchan base could not decide for the whole tribe. (E)

The re-organization is happening to the original community associations, administrative units, traditional authority structure, resettlement centers, and commissions. What could be decided in the resettlement centers and what could not had always been considered in every inhabitants' mind. In September 2011, a new organizational relationship will definitely emerge after the completion of permanent houses.

Conclusions

This case study took the example of Jongchan base to study the formation and operation of autonomy organization in the interim housing community.

This case study revealed the importance of subsistence and cultural preservation when culturally distinct areas were struck. In addition, the community participation and the autonomy were emphasized in many occasions and dialogues. Both public sectors and NGOs employed indigenous people or people with similar working experience.

NGOs not only honored the autonomy of inhabitants, but also provided administrative resources and informative support in terms of decision-making. The awareness of serving without reducing the autonomy of inhabitants is perceivable in the work of NGOs.

This example of Jongchan base represented the formation of a new autonomic organization due to new living space. Although, the tension among this autonomic organization, traditional authority, and bureaucracy existed, it did not cause any beneficial conflicts. However, some interviewees asserted that the struggle between traditional and modern authority might emerge after moving in permanent houses.

Due to its nature of temporality, the resettlement of interim housing lacks standardized and definite norms. This absence made the conditions of move-in unclear, caused the fluctuant decision of moving -in and -out, and led to an unstable commission. All these resulted in the instability of community.

From participated observation seen within the camps, two Paiwan township residents operate the organization in different degrees of aggressiveness. And the anthropological literature points out the importance of Paiwan's noble class system in the family. But in this study, respondents all said that the impact at this stage is not obvious, may be more apparent after moving into the permanent house. Above two issues deserve the future conduct of the region's post-disaster reconstructions, researchers will continue to explore the community.

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SINTONIA: A Model of Collaboration and Innovation for Puebla and the Region

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In our days, it is common to hear about competitiveness in economic and social development, but what are the factors that produce competitiveness in the microeconomic environment for business and what is the meaning of competitiveness in organizations, local business, or a region. There is a vast range of factors that affect productivity, and therefore, competitiveness, including strategies, policies, and norms. The way to collaborate and to participate as a group is a critical aspect to be successful in the business environment which has a direct impact on the level of competitiveness in any region. Thus, it is crucial to have an IFC (institution for collaboration) as the leader to coordinate the economic development efforts in a region. Such is the case of Puebla, Mexico. The role of the IFC is to be involved with the actors and factors that increase competitiveness in any type of market. The purpose of this paper is to show SINTONIA, as an IFC, where collaboration, innovation, and shared value are part of the model designed at UPAEP University (Universidad Popular Autónoma del Estado de Puebla), Puebla.

Keywords: competitiveness, collaboration, IFC (institution for collaboration), economic development, cluster, shared value

Introduction

A new competitiveness agenda with appropriate policies is crucial for México to achieve macroeconomic stability, enhance business productivity, and establish long-term economic growth. The National Development Plan established a 3.5% growth per year, which is a 2.4% growth in GDP (Gross Domestic Product) per capita. To achieve this, the plan proposes to work on competitiveness, macroeconomic stability, foreign investment, employment generation, and growth. The state of Puebla has fallen behind in all development indicators. With 217 municipalities, Puebla contributes 3.6% of the Mexican GDP and represents 5.1% of the population in México (31 states and the capital). Among 10 national performance indices, Puebla scores below the national average on all, with the general index for state competitiveness placing Puebla 24th among states. Compensating for 15 years of a non-competitive agenda, the new state government is working hard towards increased transparency and commitment to building capacity across sectors.

As a consequence of Puebla's lack of competitiveness agenda and to leverage the relationship between

UPAEP (Universidad Popular Autónoma del Estado de Puebla) University and the ISC (Institute for Strategy and Competitiveness) at HBS (Harvard Business School), a competitiveness initiative called SINTONIA was launched in January 2012. Since 2005, UPAEP University has accomplished foundational research and analysis to identify key sectors and clusters, positioning us to fulfill our objectives. Engagement of key stakeholders and leadership is on their way, with the commitment of all sectors of government, private industry, and universities. UPAEP University's investment thus far has created momentum and trust through SINTONIA, supported by an applied research and interdisciplinary team. As a core element of SINTONIA's strategy, Dr. Michael Porter is a member of the Executive Board. Participating intensively in this endeavor, his presence ensures industry participation as well.

This article presents the major milestones to constitute SINTONIA, an IFC (institution for collaboration) based on the model of the ISC at HBS. The ISC university network is formed by more than 80 universities around the world teaching the MOC (microeconomics of competitiveness) graduate course directed by Dr. Michael Porter. UPAEP University is part of this network and has been teaching the course for over five years. One of the main objectives of this network is to have a profound impact on the development of the region by having institutes for competitiveness supporting the development of the city, the region, and even the nation. SINTONIA is in the case of Puebla, the IFC initiated by UPAEP University, as a collaborative entity, which is capable of foster productivity, innovativeness, and shared value for the state in order to increase competitiveness and the sustainable social and economic development of Puebla, the region, and Mexico, through a harmonized tetra helix model: companies, government, universities, and society.

SINTONIA is providing the infrastructure and support for this regional competitiveness initiative. It is a forum for analysis, debate, and specific actions related to the state of Puebla's competitiveness and the region. It is also using the created platform to improve the business environment in Puebla, without any linkage to any particular political party or administration. One of the main goals of SINTONIA is to support the development and implementation of unique cluster value proposition strategies with a particular interest in promoting shared value projects in organizations (Porter, 2011).

The Journey of Forming SINTONIA

SINTONIA's team designed a methodology to cope with such a challenge by implementing an intensive action plan to promote the dialogue between all the stakeholders of the tetra helix system. The plan included a series of events shown in Figures 1 and 2, involving several conferences by well-known international specialists in issues of economic development and clusterization. The kickoff session was critical for the success of this initiative and was brilliantly conducted by Jon Azua, the former vice-president of the Basque country, sharing his vast experience in the development of the country. It also included Burke Murphy, the former executive of economic development of the state of Minnesota, sharing her knowledge and leadership in the implementation of the state plans.

It was decided that a vital element for the success of SINTONIA was to have a common understanding and methodologies for clustering economic development. A brief executive version of the MOC course (see Figure 1) was designed for SINTONIA, consisting of practical lectures on basic concepts developed by Porter (2011), such as:

(1) Strategy and the five forces that shape industry;

(2) Value chain;

(3) The national competitiveness diamond model;

(4) Cluster mapping;

(5) Shared value.

The brief MOC course also included the discussion of three cases, Costa Rica (America), the Basque country (Europe), and Singapore (Asia), as well as several mini case studies (ceramic tile in Italy, California wine cluster, Puebla's automotive cluster, and Mexican government policies affecting competitiveness) to show the examples of the methodologies, tools, and techniques covered at each session. In parallel to the events shown in Figure 1, there were two fundamental activities taken place (see Figure 2) that contributed and accelerated the development of SINTONIA. First, the Mexico and Puebla Cluster Mapping project that generated the basic input to establish priorities of the clusters to focus on at first in Puebla and the region; and Second, the regular graduate MOC course with 46 students that decided to join the clusters to study in the SINTONIA initiative. Most of our graduate students are working professionals that joined the clusters where they had more experience. Every cluster was then formed by businessmen or students working in that cluster, government officials, professors, and people from nonprofit organizations.

The MOC graduate course explores the determinants of national and regional competitiveness building from the perspective of firms, clusters, sub-national units, nations, and groups of neighboring countries. It focuses on the sources of national or regional productivity, which are rooted in the strategies and operating practices of locally based firms, the vitality of clusters, and the quality of the business environment in which competition takes place.

This course examines both advanced and developing economies discussed over 19 cases and addresses competitiveness at multiple levels—nations and sub-national units, such as states or provinces, particular clusters, and neighboring countries. The course is concerned not only with government policy, but also with the roles that firms, industry associations, universities, and other institutions play in competitiveness. In modern competition, each of these institutions has an important and evolving role in economic development.

Figure 1. Journey of forming SINTONIA.

Figure 2. Journey of forming SINTONIA (in parallel).

Cluster Mapping Project

A key input for SINTONIA has been the development of the cluster map for Puebla and the region. This was accomplished by a team formed by Michael E. Porter, Richard Bryden, and Niels Ketelhohn from ISC and Alfonso Mendoza, Martha Cabanas, Burke Murphy, and Pablo Nuño from UPAEP University (see Figure 2). The selection of the main clusters was a result of the data analysis provided by the Cluster Mapping project, using the methodology developed by ISC at Harvard, which uses the information of the NAICS (North American Industry Classification System), the standard used by federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the business economy in Canada, USA, and México.

SINTONIA has analyzed 12 clusters based on the Cluster Mapping Project that represent a high concentration of employment and potential value added in the state. The idea was to have the necessary background to develop a competitiveness report and specific strategies for clusters. The plan included a formal presentation of the progress report to Dr. Porter in April 2012. The cluster group's motivation was kept high with such high goals in mind. During the biweekly sessions, there were representatives of different universities, companies, industries, government, and society. Cluster workshops were also organized for the participants to put in practice what they have learned in previous sessions.

Cluster Priorities

The selection of the clusters to start working with resulted from the data analysis provided by the Cluster Mapping Project and through the dialogue with cluster members in the working sessions. The clusters

considered to be more relevant for the state according to the employment and value added are described in Table 1. The results of the cluster analysis were indeed presented to Dr. Porter who gave us very constructive and valuable feedback. The competitiveness reports for each cluster are available at http://sintonia.mx/.

Table 1

Clusters Selected by SINTONIA

No.	Cluster
1	Textile and apparel
2	Automotive and plastics
3	Food processing and beverages
4	Education and knowledge creation
5	Building fixtures
6	Construction
7	Tourism
8	Agribusiness
9	Energy
10	Chemical and biopharmaceuticals
11	Health
12	Financial services

SINTONIA has taken off with Dr. Porter's visit and feedback, with cluster specific biweekly meetings and monthly plenary sessions. We are relying on the participation of the cluster groups to apply the research, diagnosis, and analysis produced by SINTONIA and the MOC teams into project detonators that will increase our regional competitiveness and prosperity.

SINTONIA's Current Program Objectives

As a collaborative institutional approach to drive and upgrade productivity and innovation in the clusters of Puebla and the region, SINTONIA is thriving to excel in shared value initiatives that will enhance community and competitiveness worldwide. We have seven main objectives:

(1) To upgrade the cluster maps and productive value chains of Puebla and the region;

(2) To develop a unique value proposition of key clusters;

(3) To consolidate the executive board of SINTONIA with business champions;

(4) To convene collaborative stakeholder's key clusters for the first time in the state;

(5) To recommend targeted foreign direct investment portfolio for the region;

(6) To identify entrepreneurial opportunities for new business growth;

(7) To accelerate economic and community development, job growth, and new business development.

Through a harmonized tetra helix model: companies, government, universities, and society, SINTONIA is becoming a forum for analysis, debate, and specific actions for the competitiveness of the state of Puebla and the region. The IFC's actions are supported by research, specialized programs from different institutions, and the permanent interaction among economic agents mainly with companies. SINTONIA aims to guide public policy development, relevant actors' agendas, and cluster dynamics.

Structure

SINTONIA's management body is integrated by representatives of the main clusters in the state and the

region, as well as by government representatives, societal organizations leaders, and universities directors and researchers. It is coordinated by an interdisciplinary group of practical academics and researchers with expertise on innovation and competitiveness projects, motivated by having a real impact on the development of the region not only by isolated research goals. The key elements of the lean organization are shown in Figure 3, which considers an executive committee, a council members nominated by each cluster to represent their interest in board meetings, cluster coordinators and task forces, an international advisory council, and honorary members.

Figure 3. SINTONIA's organizational structure.

Conclusions

The intervention research methodology put in place has proven to be very effective for the economic development project for Puebla and the region, by having an action-based research agenda combined with solid methodologies. SINTONIA and UPAEP University have been willing leaders in this endeavor, working for a number of years on the best approaches to competitiveness in the global economy; based on years of research and analysis led by the MOC faculty and students, we established foundational knowledge about the industries driving our economy, the industries in decline, and those that are emerging.

It was determined that it was time to take actions and apply this knowledge in the development of a regional competitiveness initiative dedicated to support and improve the economic and social conditions of our region. Many goals converge in this SINTONIA effort to align industry, government, universities, and civil society in a manner that will position Puebla in the global economy. The intention of SINTONIA is to be a neutral broker, providing the thought leadership from our MOC experience on clusters and the infrastructure needed to convene all the stakeholders. There is a need to involve many actors, such as non-governmental organizations, chambers, unions, just to name a few. Nevertheless, SINTONIA is reinforcing in all sessions, its five "Cs" model promoting collaboration, fair competitiveness, confidence, co-responsibility, and

commitment (Santillana, 2012) to help Puebla and México to transcend as a leading unconditional service-oriented society.

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Computational Estimation and Computational Estimation Attitudes of Pre-service Elementary Teachers

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The main purpose of this study was to obtain performance data on computational estimation of pre-service elementary teachers and explore pre-service elementary teachers' attitude toward computational estimation. Eighty-four pre-service teachers in South Minnesota participated in CET (Computational Estimation Test) and CEAS (Computational Estimation Attitude Survey). Derived from the CET, average number of items correctly answered by pre-service elementary teachers is 14.47, the percentage of correct responses is 65.80%. In general, the pre-service elementary teachers performed rather inadequately on the CET. The results shown that the percentage of correct responses of the CET with fraction is 52.33%, which is relatively low when compared with whole numbers (69.50%). The mean score of subjects' CEAS is 3.76, slightly higher than 3, indicating that the attitude of pre-service teachers today to computational estimation is neutral. The pre-service elementary teachers generally hold computational estimation in high regard, consider them necessary, useful, and beneficial. Of attitudinal measures examined, pre-service elementary teachers were highly correlated with performance on computational estimation. There was a significant positive correlation between the experience with computational estimation, confidence of computational estimation, acceptability of computational estimation value, fun of studying computational estimation, and the CET scores. However, there is no significant correlation between the tolerance for error and the CET scores.

Keywords: computational estimation, computational estimation performance, computational estimation attitude, pre-service elementary teachers

Introduction

The need for developing students' estimation skill is reflected in the agenda for action (NCTM (National Council of Teachers of Mathematics), 1980) and NCTM (2000) deemed computational estimation as an important component of students becoming proficient in mathematics. Usiskin (1986) stated that the computation of a single correct answer covers only a part of mathematics; other problems may require estimation. Moreover, Reys (1992) declared that over 80% of all mathematical real world applications call for estimation, rather than exact computation. Previous researchers (Sowder & Wheeler, 1989; Tsao & Pan, 2010; 2011) have focused mostly on elementary or secondary school students; a small amount of research has been conducted on pre-service teachers (Goodman, 1991; Tsao, 2004; 2005).

Although, all the mathematics education curricula give great importance to learning and teaching estimation, research studies showed that students are not successful about estimation (Boz, 2004). A lot of

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students are not confident in their own computational estimation skills, particularly, when it is different with a calculator-produced result. The students lay more trust in the calculator than in their own estimation skills (Glasgow, 1998). To understand why pre-service elementary teachers are so weak in computational estimation and how mathematics educators can help them improve their abilities, we first tried to understand the current performance of pre-service elementary teachers' computational estimation and what their attitudes toward computational estimation are. The researcher believes that the findings of this study will make a significant contribution to the understanding of the level of computational estimation skill, and it should play an important role in pre-service teaching programs, the motive for conducting this study rises from a deep concern for the development of computational estimation for pre-service elementary teachers. For that reason, this research anticipates to obtain current computational estimation performance of pre-service teachers and their attitudes toward computational estimation, and to get relevant information to mathematics education field so as to trigger emphasis on teaching of computational estimation.

Research Questions

(1) What level of computational estimation skill is possessed by pre-service elementary teachers?

(2) What are the pre-service teachers' attitudes toward computational estimation?

(3) How are computational estimation performance and attitude toward computational estimation of pre-service elementary correlated?

Literature Review

Computational estimation is making reasonable guesses of approximate answers to arithmetic problems, either without performing actual calculations or before performing them (Dowker, 1992). Computational estimation is a complex skill involving many of the same subtleties and complexities as problem-solving. Therefore, computational estimation is a fundamental skill that every student should develop. In many situations, computational estimation is very important and practical for everyday life. There is wide agreement among mathematics educators that the ability to judge the appropriateness of results of computations by computational estimation, may be more important and practical than precise calculation for many everyday uses of mathematics.

Scholars proposed that a good estimator can select a strategy appropriate to the problem, including the specific numbers and operations involved (Reys, 1986; Yang, 1997; Tsao, 2004). Capabilities, such as flexible thinking, decision-making, answer adjustment, and filtering out of non-sensible answers are crucial to cultivating good estimation skills (Trafton, 1988), and good estimation skills can in turn enhance applied mathematical skills and computational estimation skills which play a key role in mathematical reflection (Coburn & Shulte, 1986; LeFevre, Greenham, & Waheed, 1993; Reys & Bestgen, 1981). Apart from the benefits as a real-world skill, it allows learners to check the reasonableness of their answers and helps them develop a better understanding of place value, mathematical operations, and general number sense (Kilpatrick, Swafford, & Findell, 2001).

Development of computational estimation capability can improve students' understanding of number meaning, and get rough answer in short time to determine whether or not electronic calculator answer is reasonable, then, apply computational estimation process in realistic life. The results of studies have revealed that good estimators have a good understanding of basic facts, place value, and arithmetic properties, they are

flexible in their thinking and they use a variety of strategies. Good estimators tend to have strong self-concepts relative to mathematics, demonstrate tolerance for error, display self-confidence, attribute their success in estimation to their ability rather than mere effort, and believe that estimation is an important tool (Threadgill-Sowder, 1984; Sowder, 1994). Researchers believed that improving the teaching of computational estimation is related to encourage the development of number sense (Edwards, 1984; Tsao, 2004, 2009).

Computational estimation is not only a valuable skill in its own right, it can also be a valuable pedagogical tool used in the development of other important skills (Tsao & Pan, 2010, 2011). Estimation skills play a key role in mathematical reflection. Sowder and Wheeler (1989) analyzed the components involved with computational estimation and identified three types of conceptual knowledge, namely: (1) understanding of the role of approximate numbers in estimation; (2) understanding that estimation could involve multiple processes and have multiple answers; and (3) understanding that the appropriateness of an estimate depends on the context. Related concepts and skills require knowledge of place value, basic facts, and properties of operations, as well as ability to compare numbers by size, compute mentally, and work with powers of ten.

Research on estimation has revealed that most children and adults lack the basic and necessary skills, probably because of the limited exposure to estimation in schools (Sowder & Wheeler, 1989; LeFevre et al., 1993; Alajmi & Reys, 2007; Hanson & Hogan, 2000; Tsao & Pan, 2010, 2011). Researchers reported that college students had difficulty in estimating answers to fraction and decimal problems and they were better at estimating answers to addition and subtraction of whole numbers than estimating answers to multiplication and division problems (Hanson & Hogan, 2000; Tsao, 2004, 2005). They suggested that this may reflect a lack of a deep understanding of multiplicative reasoning and of rational numbers.

Research (Coburn & Shulte, 1986) seems to show that people with good estimation skills are also good at overall mathematical skills. The flexibility estimation offers leads to better use of mathematical skills. Good estimators tend to demonstrate a deeper understanding of number sense. Poor estimators often have a hard time in thinking a problem which has more than one correct answer and more than one correct procedure to obtain that answer.

The mathematical attitudes of pre-service teachers are very significant, because if they do not have a good understanding of mathematics, they will be unable to create an atmosphere for their students to appreciate mathematics (Glasgow, 1998). Pre-service elementary teachers' attitudes toward math are less favorable than that of the general university population (Quinn, 1998). Quinn (1998) examined the effects of an elementary mathematics methods course that stressed the use of manipulatives, technology, and cooperative learning in the teaching of mathematics on the attitudes of pre-service teachers. He found that the pre-service elementary teachers' attitudes improved significantly after completing the methods course.

Researchers have indicated that there may be specific factors related with the computational estimation, which include confidence in ability to do mathematics, confidence in ability to estimation, recognition of estimation as useful and tolerance for error (Hogan, Wyckoff, Krebs, Jones, & Fitzgerald, 2004; Hogan & Parlapiano, 2008; Reys, Bestgen, Rybolt, & Wyatt, 1982; Sowder & Wheeler, 1989).

In spite of the empirical findings thus far, additional research is needed, particularly in terms of how students reveal their affective reactions for computational estimation. Here, the researcher defines to use the term attitudes as participants' confidence in ability to computational estimation, experiences in computational estimation, feelings about themselves as learners of computational estimation, recognition of estimation as useful and tolerance for error.

Researchers proposed that good computational estimators were confident in their computational estimation skills, and students with confidence learned more than students with less confidence, and they insisted that computational estimation error was acceptable (Bestgen, Reys, Rybolt, & Wyatt, 1980; Reys et al., 1982). The studies were conducted by Chi (1996) and Reys, Lindquist, Lambdin, Smith, and Suydam (1995) to understand computational estimation performance of elementary school and secondary school students. The results revealed that most of the students had no experience of using computational estimation, while a little computational estimation experience was on verification of answers. It seems that students were requested using algorithm in school to verify answers, not using computational estimation to test the rationality of answers. However, none of the students used computational estimation to verify answers for exams, typically, students used algorithm again to verify the correctness of answers. In an examination of the correlation between "tolerance for ambiguity" and "computational estimation" using the personality test, Hogan et al. (2004) found no statistically significant correlation between these variables.

Methodology

Research Design

The main purpose of this study was to obtain performance data on computational estimation of pre-service elementary teachers and explore pre-service elementary teachers' attitudes toward computational estimation. Instruments used to collect data were the components of the CET (Computational Estimation Test) and CEAS (Computational Estimation Attitude Survey) in March 2010. The sample was composed of students in three intact entry-level mathematics sections of a course populated by pre-service elementary school teachers at a midsized, four-year, state university in a midsized town in Southern Minnesota. A total of 84 participants from these three classes completed data collection tasks during the spring semester of 2010 for the study.

Instruments

CET. CET was developed by Tsao and Pan (2011) for Grade 5 students in Taiwan. Twenty-two items from the CET were modified slightly to make them appropriate. The 22 items of CET include whole number, fraction, and decimal items, as well as the four basic operations. According to Tsao and Pan (2011), the Cronbach's alpha coefficient reliability for the CET is 0.76 for Grade 5 students. A reliability coefficient of 0.78 was obtained for the CET in the present study using Cronbach's alpha, which suggests a reasonable degree of internal consistency. CET was designed with all multiple-choice items, improper items were revised or deleted according to pilot study results. Table 1 provides CET items with number domain and the four basic operations.

Table 1

CET Items

	Addition	Subtraction	Multiplication	Division
Whole number	12, 20	14	4, 18, 15	6, 9, 1, 22
Decimals	7	5, 17	19	11, 16
Fractions	1, 10	2	8, 13	3

Recommendations of mathematics educators and pre-service teachers were referenced in constructing test items for content validity. Some samples of CET items were shown in Table 2. CET was given to the students during the first week of the spring semester. Participants were requested to follow the rules for the test: Timing

for each item is about 30 seconds, and students were told not to spend too much time on any one question.

Table 2

Samples of CET Items

Without calculating an exact answer, circle the best estimate for: 125/121 − 5/19	(1) 0.25 (2) 0.5 (3) 0.75 (4) 1
Music hall has 15 rows of seats, each row can seat 19 people, then how many people at maximum can be allowed to enter and be seated?	(1) 280 (2) 300 (3) 320 (4) 340
Without calculating an exact answer, circle the best estimate for: 436.2 ÷ 0.98	(1) 220 (2) 330 (3) 440 (4) 550

CEAS. CEAS is used to assess students' attitudes toward computational estimation. CEAS was adopt from "Computational Estimation Attitude Survey" by Tsao and Pan (2011). According to Tsao and Pan (2011), the Cronbach's alpha coefficient reliability for the CEAS is 0.94 for Grade 5 students. The survey consists of 35 items, and respondents are asked to report the extent to which they agree or disagree with each statement on a scale from 1 ("Strongly disagree") to 5 ("Strongly agree"). The survey consists of five sub-scales: "E" (Experience with computational estimation), "T" (Tolerance for error), "C" (Confidence of computational estimation), "A" (Acceptability of computational estimation value), and "F" (Fun of studying computational estimation). Each sub-scale consists of seven statements, a score of 5 is given to the response that is hypothesized to have a more positive relation to computational estimation. Scores of each domain scale and the cumulative score of all domains, indicate students' attitudes toward computational estimation. A high score represents a positive attitude toward computational estimation. The Cronbach's alpha coefficient reliability for the CEAS was 0.89, which suggests a reasonable degree of internal consistency. The five sub-scales in CEAS have demonstrated high reliability for measures of internal reliability as well. The Cronback's alpha reliability coefficient for "E" is 0.85, "T" is 0.73, "C" is 0.81, "A" is 0.80, and "F" is 0.81. The samples of computational estimation attitude items were shown in Table 3.

Table 3

Samples of Computational Estimation Attitude Items

Sub-scale	Statement
E	After getting result by calculator or computation, I often use computational estimation to check my answer.
T	When making a computational estimation, I often consider how to get a result close to the correct answer.
C	I feel relaxed and pleasant in solving computational estimation problems.
A	I want to learn more computational estimation and improve my computational estimation skill.
F	I like studying and using computational estimation.

Research Results and Discussion

Computational Estimation Performance

The performance on the CET is reported in Table 4. The test data are summarized by problem type—whether whole numbers, fractions, or decimal numbers. Within each cell of Table 4, the mean number and the percentage of items worked correctly and standard division of the mean number of items attempted.

As shown in Table 4, among all 22 items of CET, average number of items answered correctly by pre-service teachers was 14.47 and the percentage of correct responses was 65.77%. In general, the pre-service teachers' performance was not satisfied on the CET. This result is consistent with previous research, in which students generally performed poorly on computational estimation tasks (Tsao, 2004).

It seems that pre-service teachers view a reasonable answer to be an exact answer and maintain the heavy

emphasis on procedural rules, which has impacted teachers' development of number sense. Computational estimation is a complex activity that should integrate all strands of mathematical proficiency.

Table 4

Mean and Percentage of Correct Responses of CET (N = 84)

	Number of items	Possible score	Mean	SD (standard deviation)	Percentage (%)
Whole number	10	10	6.95	1.59	69.50
Fraction	6	6	3.14	1.28	52.33
Decimal	6	6	4.38	1.33	73.01
Total number of items	22	22	14.47	3.32	65.77

Table 4 displays the percentages of correct responses and mean scores on the CET by number domains for the 84 participants. The percent of correct response for fraction (52.33%) obtained on CET is lower when compared with whole number (69.50%) and decimal (73.01%). This indicated that pre-service elementary teachers had difficulty in estimating answers to fraction and they were better at estimating answers to whole numbers and decimal. In previous study (Bestgen et al., 1980), estimation with decimal numbers was more difficult than estimation with whole numbers, a finding that was not replicated in this study.

The performance on the CET is reported in Table 5 and the test data are summarized by problem type—whether addition, subtraction, multiplication, or division. The data show that the multiplication problems (56.54 %) and division problems (54.59%) percent of correct responses of the CET were relatively low when compared with addition problems (77.16%) and subtraction problems (77.66%). The pre-service elementary teachers did better on addition and subtraction problems involving computational estimation than multiplication and division problems.

Table 5

Mean and Percent of Correct Responses With the Indicated Type of CET (N = 84)

	Number of items	Possible score	Mean	SD	Percentage (%)
Addition	6	6	4.75	0.66	79.16
Subtraction	3	3	2.33	1.08	77.66
Multiplication	6	6	3.57	1.29	56.54
Division	7	7	3.82	1.66	54.59

The results confirm that estimation involving addition and subtraction was easier than that involving multiplication and division (Bestgen et al., 1980). This indicated that pre-service elementary teachers had difficulty in estimating answers to fraction and they were better at estimating answers to addition and subtraction of whole numbers than multiplication and division problems. The results may reflect a lack of a deep understanding of multiplicative reasoning and of rational numbers. Additionally, some of the students' responses reflected misunderstandings of how and when to apply certain procedures; the nature of the observed difficulties suggested that an emphasis is needed on mathematical concepts and processes underlying the basic operations. Deficiencies in the conceptualization of multiplication and division and failure to think in terms of place value. In considering the results of this study, it is important to bear in mind that the subjects were not given enough specific instruction in estimation. Estimation skills and strategies need to be taught explicitly to students. It is not likely that students will develop many specific estimation strategies "on their own" or be able to simply "pick them up" along the way. The students in this study had received over 10 years of instruction in

mathematics and still performed rather poorly on computational estimation tasks. Mathematical concepts and properties related to computational estimation need to be emphasized.

Computational Estimation Attitude

CEAS consists of five sub-scales: "E", "T", "C", "A", and "F". A score of 5 is given to the response that is hypothesized to have a more positive relation to computational estimation. Scores of each domain scale and the cumulative score of all domains, indicate students' attitudes toward computational estimation. A high score represents a positive attitude toward computational estimation.

Table 6 displays the mean scores and standard deviations on the CEAS by sub-scales for the 84 participants. Participants had a mean composite survey score of 3.76 on the 5-point Likert Scale, with a score of one representing the most negative attitude, a score of three representing a neutral position, and a score of five representing the most positive attitude. Therefore, the mean composite score reflected attitudes that were just above the neutral position.

Table 6

Means of Sub-Scale, Overall Mean, and Standard Deviation of CEAS (N = 84)

Sub-scale	Quantity	Mean(M)	SD
E	7	3.64	0.42
T	7	3.78	0.28
C	7	3.86	0.48
A	7	3.87	0.46
F	7	3.66	0.38
Total scale	35	3.76	0.31

In case of components of pre-service teachers' attitudes toward computational estimation, the mean score of "E" sub-scale is 3.64, indicating that students' experience in computational estimation seems insufficient, by confirming with Chi's (1993) finding that Taiwan's elementary school students were familiar with terms "about" and "roughly", but rarely applied estimation strategies.

The mean score of "T" sub-scale is 3.78, moderately positive attitudes. This represents attitudes that are somewhat positive, indicating that they had only moderately positive attitude scores about tolerate for error of computational estimation according to rationality of answers. Six of the items had mean scores above neutral position of 3.0, and one item had mean score above 4.0. This may indicate per-service elementary teachers who seek only to obtain exact answers are unlikely to value estimation because it involves the acceptance of the possibility and usefulness of inexact answers.

The mean score of "C" sub-scale is 3.86, indicating that students are a little confident in their computational estimation skills.

The mean score of "A" sub-scale is 3.87, slightly higher than 3.0, indicating that students could acknowledge computational estimation value and importance, and think studying computational estimation is worthy. According to Chi's study (1993), most teachers believe that computational estimation skill is very important in daily life, and computational estimation should be included in elementary school curriculum. The pre-service elementary teachers generally hold computational estimation in high regard, consider them important, useful, and beneficial.

The mean score of "F" sub-scale is 3.66, slightly above the neutral position, indicating that pre-service

teachers did not particularly enjoy computational estimation.

Table 7 displays the mean scores for item by item on the CEAS. The lowest-scoring item 17 ("After getting result by calculator or computation, I often use computational estimation to check my answer") for CEAS had a mean score of 2.78, which represents a negative attitude. The mean score for this item was the lowest on the entire survey, reflecting the most negative attitudes. Likewise, participants lay more trust in the calculator than in their own estimation skills (Glasgow, 1998). This result is consistence with item 8 ("I never use computational estimation to check answers"), and the mean score of item 8 is 3.04. It should be noted that, at this point in their education, most of the participants rarely use computational estimation to check answers.

Table 7

Mean of Students' Attitudes to Computational Estimation Sub-scale Item by Item (N = 84)

E	Item No.	11	17	19	27	8	25	31
	Mean	3.62	2.78	4.03	4.02	3.04	3.67	4.06
T	Item No.	2	7	9	18	10	24	28
	Mean	4.13	3.63	3.74	3.67	3.92	3.93	3.68
C	Item No.	1	20	26	12	15	32	34
	Mean	3.72	3. 56	3.56	4.02	4.13	3.97	4.06
A	Item No.	4	13	23	29	3	21	33
	Mean	4.16	3.89	3.85	3.86	3.45	3.95	4.09
F	Item No.	5	14	22	35	6	16	30
	Mean	3.84	3.55	3.12	3.38	3.80	4.01	3.92

Note. Negatively items have been scored reversely.

The mean score of item 22 ("Computational estimation is a joyful and interesting task") is 3.12, indicating that students enjoy studying computational estimation is moderate. This result is in consistence with item 35 ("I like studying computational estimation and using computational estimation"), and the mean score of item 35 is 3.38. The pre-service elementary teachers appear to have less favorable attitude toward computational estimation learning. It is certainly agreed upon by educators that elementary school teachers are at a disadvantage if they are not interested in computational estimation, and he/she tends not to enroll in additional college mathematics courses. Researchers believed that most elementary teachers are afraid of math and they are less interested in math than the other subjects they are required to teach (Ralston, 1999; Tsao, 2004).

The item 4 has a mean score of 4.16 ("I feel that computational estimation is very useful in daily life"), the mean score of item 21 is 3.95 ("Absolutely, computational estimation is not worth to study"), and the mean score of item 33 is 4.09 ("Computational estimation is only useful for dealing with exams"). Pre-service teachers of this study, as a whole, demonstrated that they valued computational estimation. They viewed computational estimation as worthwhile, useful, and necessary. This finding should be encouraging to those in the field of mathematics education. These results indicate that perhaps mathematics educators have had some success in achieving this goal. Furthermore, it is promising that these pre-service teachers valued computational estimation, as perhaps they will be more likely to pass on this positive aspect of computational estimations to their future students. The pre-service teachers' beliefs and disposition toward computational estimation might have influenced pre-service teachers' perceptions about computational estimation. Likewise, Alajmi and Reys (2007) found that middle school mathematics teachers perceived computational estimation as an important skill for daily life outside the school environment, but not appropriate for school mathematics.

Computational Estimation Ability and Computational Estimation Attitude

The CEAS sub-scale data for the combined five sections on the "E", "T", "C", "A", and "F" were 25.53, 26.52, 27.02, 27.15, and 25.62 respectively. Using correlation analysis of the CEAS sub-scales were obtained for collection with the CET. Table 8 displays the results.

Table 8

Pearson's Correlation Coefficient Between CET and Sub-scale of CEAS

	CET	E	T	C	A	F
CET	1.000					
E	0.308**	1.000				
T	0.130	0.268**	1.000			
C	0.330**	0.586**	0.255**	1.000		
A	0.279**	0.625**	0.357**	0.513**	1.000	
F	0.201*	0.522**	0.297**	0.578**	0.670**	1.000

Notes. $^*p < 0.05$, $^{**}p < 0.01$.

To identify the relationship between attitude toward computational estimation and computational estimation performance, the responses to the sub-scale attitude items were correlated with the scores on the CET, except "T" sub-scale items. There was a significant positive correlation between the "E", "T", "C", "A", "F", and the CET scores.

There was no significant correlation between the "T" and the CET scores. There was a significant positive correlation between the CET scores and the CEAS scores ($p < 0.01$, r = 0.34). Of the attitudinal measures examined, the pre-service elementary teachers' attitudes toward computational estimation were highly correlated with performance on computational estimation.

The pre-service elementary teachers generally hold computational estimation in high regard, consider them necessary, useful, and beneficial. The findings confirm Reys et al. (1982) and Gliner's (1991) findings, which suggested that the correlation between confidence of computational estimation and computational estimation ability was statistically significant. Good computational estimators felt confident in their computational estimation competence; students with confidence learned more than students with less confidence, and studied subsequent mathematic concepts better with more fun. There was no significant correlation between the "T" and the CET scores. The findings confirm Hogan et al.'s (2004) finding, which suggested that the correlation between "T" and computational estimation ability was statistically insignificant. This contrary to Reys et al.'s (1982) findings stated that students not being successful in estimation maybe related with a low tolerance for error.

Conclusions

Based on the CET results, the average number of items correctly answered by pre-service elementary teachers is 14.47, the percentage of correct responses is 65.80%. In general, the pre-service teachers performed rather inadequately on the CET. The results shown that the percentage of correct response of the CET with fraction is 52.33%, which is relatively low when compared with whole numbers (69.50%). It was reflected in the pre-service elementary school teachers in this study who displayed lack of knowledge in mathematics, particularly, those who experienced difficulties with performing computational estimation skills (NCTM, 1989;

Kaminski, 1997; Tsao, 2004). We should recommend that computational estimation and mental mathematics skills should be developed and practiced and the applications of computation skills to solving problems emphasized on undergraduate mathematics courses of elementary school teachers. For instance, pre-service teachers have discussed between the benefits of estimating and work situations for which estimates may be more appropriate than exact answers. Stress that there is no right or wrong estimate, only ones closer or farther from a computed answer, and the importance of the degree of exactness depends on the requirements of the situation.

The computational estimation is a complex process with cognitive and affective components. In this study, the researcher focused attention on the attitude sub-scales, and subsequently, identified four sub-scales positive significantly correlated with computational estimation performance, including experience in computational estimation, confidence in ability to use computational estimation, acceptability of computational estimation value, fun of studying computational estimation. For example, result is supported to Gliner's (1991) findings that students' self-confidence in their ability to use computational estimation was positive significantly correlated with their computational estimation scores. The findings confirm LeFevre et al.'s (1993) findings that students' high self-reported estimation skill correlated with high math marks, and also with the belief that estimation is useful in everyday situation. Tolerance for error in estimation could diffuse good estimators' thoughts, thus, making the individuals more comfortable with pay-offs (Sowder, 1992; Reys et al., 1982). These findings highlight the importance of attitude sub-scales that are associated with the computational estimation ability. These results revealed that variations existed among the students according to their confidence, values, experience, and enjoy learning about computational estimation. These attitude sub-scales make distinction between good estimators and poor estimators. It should be recognized that not only cognitive factors but also attitude factors are influencing students' computational estimation achievement.

Recommendation

The findings of this study show that pre-service elementary school teachers performed rather inadequately on the CET. This result highlights the need for mathematics educators to promote an appreciation for estimation in classes, emphasize and use real-world examples of estimation, facilitate students supplying multiple acceptable answers of computational estimation within an appropriate range, and be flexible in acceptance of exact answers, as well as estimated answers. Such changes in mathematics teachers' instructional practice, relative to estimation, can potentially foster students developing positive dispositions towards the usability and practicality of estimated answers. Future research ought to find means to improve pre-service teachers' disposition about computational estimation and to evaluate the roles mathematics educators play in influencing pre-service teachers' disposition and learning of computational estimation.

The results of this work can benefit the research community by contributing literature related to computational estimation and teaching for the development of number sense. In closing, the researcher has identified affective factors that are associated with computational estimation and do believe further research is needed regarding the impact of affective factors on computational estimation.

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Self-efficacy, Achievement Motivation, and Academic Procrastination as Predictors of Academic Performance

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The purpose of this study was to determine the relationship between academic self-efficacy, achievement motivation, and academic procrastination with academic performance, and investigate predictive validity of them with academic performance and interaction of them with gender to academic performance. To achieve this aim, samples of 200 students (100 males and 100 females) were selected by multi-stage cluster sampling from high schools of Orumieh. All participants were asked to complete Lay's academic procrastination scale, Herman's achievement motivation scale, and self-efficacy scale. The data were analyzed using mean standard deviation, t-test, and regression analyses. The result of multiple regression analysis reveals that academic self-efficacy is the best predicator and academic procrastination inversely is a significant predictor of academic performance. Also, extra result of t-test reveals that there is no significant difference between the mean score of girls and boys in academic procrastination ($T = 0.47$, $P = 0.640$) and academic self-efficacy ($T = 0.29$, $P = 0.730$). Furthermore, There is a significant difference between boys and girls, in terms of the level of achievement motivation ($T = 2.06$, $P = 0.040$) and academic performance ($T = 2.66$, $P = 0.009$).

Keywords: self-efficacy, achievement motivation, academic procrastination, academic performance, gender

Introduction

Academic Performance

Academic performance is one of the top priorities for schools. It is the outcome of education, and it refers to the extent to which a student, a teacher, or an institution has achieved their educational goals. There are two traditional indicators of academic performance, namely, grades and highest level of educational attainment. These two indicators are arguably the most important to educators, students, their parents, and those people who make public policy decisions.

Academic performance is commonly measured by examinations or continuous assessment, but there is no general agreement on how it is best tested or which aspects are the most important.

The educational psychology literature decisively indicates that the psychological variables have an important role in academic performance (Ackerman, Chamorro-Premuzic, & Furnham, 2010). Recent studies on school children (Deary, Strand, Smith, & Fernandes, 2007) and university students (Rohde & Thompson, 2007) have confirmed this.

Some psychological factors play an important role to promote or decline academic performance, such as self-efficacy, achievement motivation, and academic procrastination. So, it is very important to recognize that

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and use them to improve the academic performance of students.

Self-efficacy

A growing body of literature supports the relationship between students' self-efficacy beliefs for academic tasks and their academic performance. Some researchers (Paul & Gore 2006; Lilian, 2012) have investigated the role that academic self-efficacy beliefs play in predicting college success. They suggested that a positive relationship could be observed between these two variables. For example, in a study conducted in Spain (Valle, 2009), the researcher studied the relationship between university students' self-efficacy for performance and learning and their effort regulation. It was found that when students possessed a higher self-efficacy, they were more likely to put more efforts into their academic studies. Self-efficacy is commonly defined as the belief in one's capabilities to achieve a goal or an outcome. It affects every area of human endeavor, by determining the beliefs a person holds regarding his or her power to affect situations, thus, strongly influencing both the power a person actually has to face challenges competently and the choices a person is most likely to make (Luszczynska & Schwarzer, 2005). Self-efficacy is the measure of one's own competence to complete tasks and reach goals (Ormrod, 2006). Self-efficacy refers to the judgments of a person's capabilities, and it is a capability to carry out the actions needed to succeed in a task. It is one of the strongest factors predicting performance in domains as diverse as sports, business, and education. Klassen, Krawchuk, and Rajani (2008) believed that self-efficacy strongly influences our task, choice, level of effort, persistence, and resilience. In academic settings, self-efficacy is a strong predictor of performance (Klassen et al., 2008). Vuong, Brown-Welty, and Tracz's (2010) study examined the effects of self-efficacy on academic success with a sample of 1,291 college sophomores recruited from five of the 23 California state university campuses. These investigators showed that self-efficacy beliefs had a significant and positive effect on the academic achievement of students. Adeyemo's (2007) study with a sample of 300 students who are in their first or second year at the University of Ibadan, Nigeria, demonstrated that academic self-efficacy had a significant and positive effect on academic achievement.

Theory of self-efficacy lies at the Center of Bandura's Social Cognitive Theory, which emphasizes the role of observational learning and social experience in the development of personality. This theory says that there are three factors that influence self-efficacy—behaviors, environment, and personal/cognitive factors. They all affect each other, but the cognitive factors are the most important. Self-efficacy developing from mastery experiences in which goals are achieved through perseverance and overcoming obstacles and from observing others succeed through sustained effort (Bendura, 1977). High self-efficacy can affect motivation in both positive and negative ways. The concept of motivation is used in many different disciplines to analyze the "what and why" (Deci & Ryan, 2000) of human action.

Gender differences with regard to perceived self-efficacy expectations and academic performance represent an important issue in educational research. This may affect enrolment for college courses, career choices, and the use of knowledge in future work settings. Busch's (1995) study on 154 undergraduate students (77 males and 77 females) of Business Administration in a Norwegian college, indicated that female students had significantly lower self-efficacy in computing and marketing and higher self-efficacy in statistics than male students, and there was no significant gender difference in academic performance. Abesha (2012) examined the effect of sex of the students on their academic self-efficacy and academic achievement and found out that sex of the students had a significant effect on their academic achievement, favoring male students (i.e., explained 9.1%

of the variance in the academic achievement of students).

Achievement Motivation

Another key to understand academic performance maybe is achievement motivation. Motivation has received much attention from many researchers with different psychological and philosophical perspectives in different fields of study, especially psychology and education, due to its significant effect on students' learning, persistence, and academic achievement.

It is obvious that students who are not motivated to succeed will not work hard. In fact, several researchers (Tucker, Zayco, & Herman, 2002) have suggested that only motivation directly affects academic performance; all other factors affect achievement only through their effect on motivation. Ahmad and Rana (2012) found out that motivation influences academic performance of college students. Academic motivation is close to the term "motivation to learn". Obviously, it is also part of academic learning. Hall (as cited in Akinsola, Adedeji Tella, & Adeyinka Tella, 2007) believed that there is a need to motivate pupils so as to arouse and sustain their interest in learning mathematics. Akinsola, Adedeji Tella, and Adeyinka Tella examined the effect of achievement motivation on academic achievement and learning outcomes in mathematics with a sample of 450 (260 males and 190 females) secondary school students in Nigeria. This investigator reported that students who had higher achievement motivation scored significantly high scores on a mathematics achievement test compared to their counterpart students with lower achievement motivation. Intellectual ability and achievement motivation were associated positively with academic success (Busato, Prins, Elshout, & Hmaker, 2000). One study in Malaysia showed a significant and positive correlation between students' achievement motivation and their academic achievements (Mahyuddin, Elias, & Noordin, 2009).

Onete, Edet, Udey, and Ogbor (2012) examined the relationship between 750 first year education students' achievement motivation and their academic performance. They indicated that neither students' academic performance motivation nor students' social achievement motivation had any significant influence on education students' academic performance. Akinsola, Adedeji Tella, and Adeyinka Tella (2007) showed that gender difference was significant when impact of motivation on academic performance was compared in male and female students in Nigeria. Faruk (2011) studied the role of academic motivation and academic self-efficacy on academic procrastination with 774 students in Turkey. Their study results showed a low relationship between academic procrastination and self-efficacy. The study of Nisa, Noureen, and Naz (2011) revealed that achievement motivation and self-concept are significantly related to academic performance and significant gender differences were discovered, which were in favor of girls. They suggested that teachers must use motivational strategies to involve students in academic activities for improving their grades. Shekhar and Devi's (2012) study was carried out on 80 undergraduate students of various colleges from Jammu region, revealing no significant difference between the achievement motivation of male and female college students.

Academic Procrastination

The third key to understanding academic performance is academic procrastination. Procrastination is considered as one of the most serious problems in daily life and educational settings in modern societies. Studies throughout history showed that it has been a damaging disaster for individuals at least from three thousand years ago (Steel, 2007). Procrastination is the tendency to put off an activity to a latter time or to the last possible minute under one's control, or even not to do it at all (Gafni & Geri, 2010). Steel (2007) defined "procrastination" as "a prevalent and pernicious form of self-regulatory failure that is not entirely understood".

Academic procrastination is a pervasive and potentially maladaptive behavior for many universities and college students, it often results in feelings of psychological distress (Solomon & Rothblum, 1984, as cited in Binder, 2000). Academic procrastination seems to be prevalent in academic settings where students tend to delay their tasks without valid excuses and submit their assignments until the last minute before the deadlines. The cognitive component of procrastination involves the discrepancy between intentions and actual behavior. Al-Attiyah's (2010) study on 538 Qatari primary students revealed that 30-40% of the students consider procrastination as a critical problem that hinders their personal and functional balance. Howell and Watson (2007) examined the relations between procrastination, achievement goal orientations, and learning strategies on 170 undergraduate students. They showed that procrastination related negatively to a mastery-approach goal orientation. Akinsola, Adedeji Tella, and Adeyinka Tella's (2007) study on 150 students in the department of mathematics and mathematics education students in a university of Ibadan found that the subjects, with low procrastinators, perform better than the moderate and the high procrastinators. Sepehrian and Lotf (2011) showed that problem-oriented coping style, inversely, is a significant predictor of academic procrastination. And, there was no significant difference between boys and girls, as far as the level of academic procrastination concerns. In another study, Sepehrian and Hosaeinzadeh (2012) proposed a structural modeling analysis of the relationship between coping styles with academic procrastination in students. Their proposed structural model on 157 undergraduate students showed that task-oriented coping style had a negatively effect on academic procrastination and anxiety was a significant predictor of academic procrastination. Another result of their study revealed that perfectionism could not significantly predict academic procrastination. There was not any significant difference on academic procrastination scores with regard to academic field. Onwuegbuzie's (2004) study on 135 graduate students revealed that academic procrastination resulting from both fear of failure and task evasiveness, which was related significantly to worth of statistics, interpretation anxiety, test and class anxiety, computational self-concept, fear of asking for help, and fear of the statistics instructor.

Socio-demographic variables, such as gender and age might have a great impact on procrastination. Balkis and Duru (2009) indicated that procrastination significantly differed by gender, and it was negatively related to academic achievement. Özer, Demir, and Ferrari (2009) argued that male students reported more procrastination on academic tasks than female students. Significantly, more female students than male students reported greater academic procrastination because of fear of failure and laziness; male students reported more academic procrastination as a result of risk-taking and rebellion against control than female students did. Some of the studies revealed that males are more procrastinators than females (Senécal, Koestner, & Vallenard, 1995). Yong (2010) found out that male students procrastinated more than female students on writing term papers. But, Akinsola, Adedeji Tella, and Adeyinka Tella's study (2007) reported equal level of academic procrastination between male and female students, and it also had an impact on their academic achievement. And the results of Şirin's (2011) study on 774 students showed that the levels of academic procrastination did not differ in terms of gender.

Methodology

Objective

Regarding the above-mentioned studies, the purpose of this study was to determine the relationship between academic self-efficacy, achievement motivation, and academic procrastination with academic performance, and investigate the predictive validity of them with academic performance and interaction of

them with gender to academic performance.

In order to achieve these goals, the following hypotheses were devised and tested:

(1) Self-efficacy, achievement motivation, academic procrastination, and gender are meaningful predicators of students' academic performance in university;

(2) There is a meaningful difference between girls and boys who study at university regarding academic self-efficacy;

(3) There is a meaningful difference between girls and boys who study at university regarding achievement motivation;

(4) There is a meaningful difference between girls and boys who study at university regarding academic procrastination;

(5) There is a meaningful difference between girls and boys who study at university regarding academic performance.

Participants

The statistical population of the present descriptive-correlation study included all of the students studying in pre-collage of Orumieh city during the academic years of 2011-2012. The participants of the study were 200 students (100 males and 100 females) studying in pre-collage, they were randomly selected by multi-stage cluster sampling from different schools.

Instrument

In this study, Lay's academic procrastination inventory, Herman's achievement motivation scale, and self-efficacy scale were used to gather data.

Lay's academic procrastination inventory. This scale was designed by Lay (1986; as cited in Sirois, 2007) to measure the tendency of students' procrastination in their academic tasks and includes 20 questions. This scale individually or in groups can be conducted. Sirois (2007) reported the internal homogeneity of this criterion by using alpha in a sample of 254 persons to be 0.90. In the present study, the reliability of this scale was 0.787, 0.718, and 0.768 for all samples, female samples, and male samples respectively.

Herman's scale of achievement motivation. This questionnaire was made by Herman in 1970. The first questionnaire consisted of 92 questions distinguishing people of high achievement motivation from those of low achievement motivation on the basis of 10 characteristics. Herman found out that these 10 characteristics were on the basis of his previous researches, and he chose them as basis and guidelines of his questions. After testing and analyzing the questions and calculating the correlation of each question with the whole questions, 29 ones were selected as the optimal questionnaire for achievement motivation (Houman, 2009).

Khazaei, Esmaeilpoor, and Eslami (2012) used the two methods of alpha—Cronbach and retest after three weeks to measure the equilibrium which he obtained 0.82 and 0.85 respectively. Pouratashi, Rezvanfar, and Mokhtarnia (2013) reported Cronbach alpha equal to 0.86. In the present study, the reliability coefficient was 0.728, 0.749, and 0.708 for all samples, female samples, and male samples respectively.

Self-efficacy scale. The self-efficacy scale ($a = 0.89$) consisted of nine items regarding perceived competence and confidence in performance of class work (e.g., "I expect to do very well in this class", "I am sure that I can do an excellent job on the problems and tasks assigned for this class", and "I know that I will be able to learn the material for this class") (Pintrich & Groot, 1990). The test can be administered to both individuals and groups. In the present study, the reliability coefficient was 0.829, 0.819, and 0.810 for all

samples, female samples, and male samples respectively.

Procedure

The study was conducted in high schools. All participants were asked to complete Lay's academic procrastination scale, Herman's achievement motivation scale, and self-efficacy scale. They were also given adequate instructions on how to respond to the questions. The respondents were also assured that their participation in the study was voluntary and their responses would remain confidential and be used for research purpose only.

The data were analyzed using mean, standard deviation, t-test, and regression analysis.

Results

In order to analyze the data and test the hypotheses of the study, the descriptive indices of variables (mean, SD (standard deviation), skewness, and kurtosis) have been presented in order to check the normal distribution of the data. Skewness and kurtosis indices suggest the normality of data distribution.

The correlations between academic procrastination, achievement motivation, and self-efficacy with academic performance were calculated using Pearson's correlation coefficients (see Table 1).

Table 1

Correlation Between Academic Procrastination, Achievement Motivation, and Self-efficacy With Academic Performance

Variable	All		Female		Male	
	R	R^2	R	R^2	R	R^2
Academic procrastination	-0.30[**]	0.09	-0.33[**]	0.05	-0.19	0.04
Academic self-efficacy	0.41[**]	0.17	-0.42[**]	0.18	0.42[**]	0.18
Achievement motivation	0.25[**]	0.06	0.31[**]	0.17	0.19	0.04

Note. [*] P<0.005, [**] P<0.001.

According to the results (see Table 1), there is a significant correlation between academic procrastination ($R = -0.30$), achievement motivation ($R = 0.25$), and self-efficacy ($R = 0.41$) with academic performance.

A multiple regression analysis was carried out to find which of the variables predicts academic performance. Results of the analysis have been summarized in Table 2.

Table 2

Summary of Regression Analysis of Academic Performance According to Variables

Predictor variables	B	SE	$Beta$	T	P	F	P	R	R^2	Adjusted R square	SE
Constant	11.97	1.170		10.22	0.000	22.59	0.000	0.53	0.32	1.27	22.59
Academic self-efficacy	0.11	0.015	0.42	7.08	0.000						
Academic procrastination	-0.31	0.008	-0.23	-3.73	0.000						
Academic motivation	0.03	0.009	0.21	3.44	0.001						
Gender	0.40	0.186	0.13	2.14	0.034						

Table 2 illustrates the results of regression of academic self-efficacy, academic procrastination, and academic motivation on academic performance.

The result of multiple regression analysis revealed that academic self-efficacy ($Beta = 0.42$, $P < 0.000$) was the best predicator and academic procrastination ($Beta = -0.31$, $P < 0.000$) inversely is a significant predictor of academic performance (see Table 2). The explanation of 32% variance of academic performance

by academic self-efficacy, achievement procrastination, academic motivation, and gender indicates that there are some other factors which have roles in predicting academic performance, which have not been investigated in this research.

For examination of 2-5 hypotheses with regard to condition of homogeneity of variances on the base of Levene's F, t-test was used for data analysis (see Table 3).

Table 3

T-test Scores of Female and Male Students in Academic Self-efficacy, Academic Procrastination, Academic Motivation, and Academic Performance

Variables	N		M		SD		T	P	F	P
	Female	Male	Female	Male	Female	Male				
Academic self-efficacy	100	100	45.82	46.11	5.86	6.15	0.29	0.730	0.57	0.43
Academic procrastination	100	100	49.57	50.18	8.98	9.49	0.47	0.640	0.17	0.68
Academic motivation	100	100	60.83	62.73	6.21	6.81	2.06	0.040	0.72	0.40
Academic performance	100	100	18.12	17.55	1.44	1.55	2.66	0.009	1.50	0.22

Table 3 illustrates how female and male respondents rated themselves on the items of the academic self-efficacy, academic procrastination, academic motivation, and academic performance.

The result of t-test revealed that there is no significant difference between the mean scores of girls and boys in academic procrastination ($T = 0.47$, $P = 0.640$) and academic self-efficacy ($T = 0.29$, $P = 0.730$). There was a significant difference between boys and girls, in terms of the level of achievement motivation ($T = 2.06$, $P = 0.040$) and academic performance ($T = 2.66$, $P = 0.009$).

Discussion

As mentioned above, the aim of the present research was to examine the relationship between self-efficacy, achievement motivation, and academic procrastination with academic performance.

The results from multi-variable regression indicated that academic self-efficacy had a significant and positive direct effect on the academic performance of students. These findings are similar with the findings of many previous international studies (Vuong et al., 2010; Valle, 2009). The findings of numerous previous studies conducted in universities (Paul & Gore, 2006; Lilian, 2012), which reported a significant and positive effect of academic self-efficacy on academic performance. In addition, the present findings are consistent with many previous international studies (Klassen et al., 2008; Adeyemo, 2007). The current findings are in agreement with Bandura's (1997), which demonstrated that academic self-efficacy had a significant and positive effect on the academic performance of college/university students. There is an evidence that self-efficacious students participate more readily, work harder, persist longer, and have fewer adverse emotional reactions when they encounter difficulties than those who doubt their capabilities. Findings suggest that academic self-efficacy is an affective factor to predict academic performance. Self-efficacy is one component of Social Cognitive Theory, a learning theory which identifies determinants governing thought, motivation, and human action. Self-efficacy beliefs are mediated through a variety of processes (cognitive, motivational, affective, and selective), which translate them into specific actions or behaviors (Bandura, 1997, as cited in Habel, 2009). There is little doubt that academic self-efficacy is central to success in a range of performance areas. Higher academic self-efficacy is strongly associated with improved performance. In addition, findings resulted from multi-variable regression show any meaningful relationship between achievement motivation and academic performance ($P \leq 0.001$).

The current findings are in support of many previous international studies (Ahmad & Rana, 2012; Busato et al., 2000; Onete et al., 2012; Tucker et al., 2002; Nisa et al., 2011; Mahyuddin et al., 2009), which documented that achievement motivation had a significant and positive effect on the academic achievement of students in higher education institutions. Individuals with high achievement motivation have the capacity to set high personal and achievable goals, they are concerned for personal achievement rather than the rewards of success. In addition, achievement motivation, especially academic motivation orients students toward learning and understanding, developing new skills and cognitive strategies for solving problems, and leads to focus on self-improvement using self-referenced standards, because academic motivation enables students to set achievement goals, and thus, students work hard and exert maximum efforts to achieve those goals. Both female and male students who perceived themselves as having higher achievement motivation were found to have higher academic achievement when compared with their counterparts who described themselves as having lower achievement motivation. Thus, these could be the reasons why achievement motivation has a significant and positive effect on the academic achievement of students. The results of Pearson's correlation coefficient revealed that there is a significant negative correlation between academic procrastination and academic motivation and also results of multiple regression demonstrated that procrastination inversely is a significant predictor of academic performance. The findings are supported by findings of previous researches (Sepehrian & Lotf, 2011; Howell & Watson, 2007; Akinsola, Adedeji Tella, & Adeyinka Tella, 2007).

The result of *t*-test related to the second hypothesis of the research showed that there was no significant difference between boys and girls, in terms of the level of academic self-efficacy ($T = 0.29$, $P = 0.730$). This finding does not agree with the research results of Busch's (1995), in which female students had significantly lower self-efficacy than male students. Also, the present findings do not consistent with Abesha's findings (2012), who reported that male students had significantly lower self-efficacy than female students. These different results may be due to differences in measurement instruments and culture.

The result of *t*-test related to the third hypothesis of the research showed that there was significant difference between boys and girls in terms of the level of achievement motivation ($T = 2.06$, $P = 0.040$). The findings of this study support existing research (Akinsola, Adedeji Tella, & Adeyinka Tella, 2007; Nisa et al., 2011) in those females scored significantly higher than males in the area of achievement. This finding disagrees with the research results of Shekhar and Devi (2012), which documented that there was no significant sex difference in achievement motivation of students.

The result of independent *t*-test related to the forth hypothesis of the research showed that there was no significant difference between boys and girls in terms of the level of academic procrastination. The results of this study are in conformity with the researches of Sirin (2011), but disagree with the research results of Sepehrian et al. (2012), Özer et al. (2009), Steel (2007), and Yong (2010), in which reported that there was a meaningful difference between boys and girls in terms of the level of academic procrastination. These different results may be due to differences in time preferences for studying courses and exams.

The independent *t*-test was applied to compare the mean scores of males and females academic performance, females significantly showed higher mean scores on academic performance in comparison to males. Most studies show that, on average, girls do better in school than boys. Girls get higher grades and complete high school at a higher rate compared with boys (Jacobs & Osgood, 2002). One probable explanation for the gap in the academic achievement between female and male students could be a consequence of childhood sex-role socialization patterns. But Abesha (2012) showed that male students had higher academic

achievement compared to their female counterparts.

Conclusions

The findings of this study would also help students know and understand that their own personal characteristics (i.e., academic self-efficacy, achievement motivation, and academic procrastination) have significant roles in their academic performance, and consequently, enable them to take timely measures to promote their academic self-efficacy and achievement motivation and reduce academic procrastination, and thereby, improve their academic performance. The need for developing students' self-efficacy in school is essential for improving academic outcomes. This study is recommended to improve efficacy and motivation in male students, who need to pay more attention to.

On the limitations of this research, it can be said that this research was only conducted in Orumieh with the high school students. So, it is impossible to generalize the findings to students of other schools of the country. In spite of the mentioned limitations and according to the findings, the present research is recommended that future research studies the relationship between academic procrastination with other variables.

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African Indigenous Education: A Case of the Keiyo of Kenya

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Education in any society, whether indigenous or modern, remains an important enterprise and asset by which the society models and determines its existence. It is formed in the process of propagating desirable survival skills to the succeeding generations. Through education, society sets and defines its basic survival needs. Thus, besides other components, such as cognitive, creative, and dialogical, the overriding significance of education can be summed up in its normative definitions. This was due to the fact that its impact was to be identified in the extent to which it affected and modified one's behaviour in society. Based on this understanding, this paper focuses on the place of indigenous African education in the Keiyo of Kenya. Its aim is to define, justify, and affirm the importance of indigenous African education as an irreplaceable component in holistic development of learners. Being a library-based study, its data are mainly obtained from books, educationists, and from discussions with old men and women in the Keiyo community. A purely qualitative method was adopted so as to gain a deeper understanding of the pertinent issues involved in indigenous African education. Thus, the principle methods used included critical analysis and speculative and dialectic methods of investigation. On the overall, the essence of indigenous African education is critically discussed. Similarly, an exploration of various trends in indigenous African education has been made. Finally, the role of indigenous African education is examined. The study concludes by making practical recommendations on possible ways and avenues through which indigenous African education can be enhanced in Kenya.

Keywords: African, indigenous, Keiyo, education, Kenya

Introduction

Education is an universal process occurring in all human societies involving passing on of its culture that is the social, ethical, intellectual, artistic, and industrial attainments of a group, by which it can be differentiated from another group. It, therefore, goes on formally and has deep roots in the environment in which it takes place.

No study of the history of education could be complete without adequate knowledge of traditional or indigenous education system prevalent in Africa before the introduction of Islam and Christianity. Every society, whether simple or complex, has its own system for training the youth. When a society develops a process related to its environment and passes it on from generation to generation, it becomes peculiar to members and the environment (Fafunwa, 1974), and then, may be safely referred to as indigenous. Thus, there arises the term "indigenous education".

Background of the Study

One of the mistakes that early Europeans made in Africa was to assume that they brought education to the

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entirely uneducated people. They argued that before their arrival in Africa, the young were left in total ignorance and any learning that existed involved the young imitating the old. If literacy and formal Western schooling are the only elements that constitute education, then, they were right; but, if education is seen as a preparation for living in the society into which one is born, they were certainly mistaken. The African people had developed their own systems of education long before the coming of the Europeans and the Arabs to Africa.

These systems of education bore basic similarities, but each of the many ethnic groups had its own distinctive features reflecting its particular life and culture. The basic similarities in indigenous African education were strongly adapted to the environment; aimed at conserving the cultural heritage of the family, clan, and ethnic group; adapted children to their physical environment and taught them how to use it; and explained to the children that their future and their community depended on the continuation and understanding of their ethnic institutions of laws, language, and values they had inherited from the past (Sifuna & Otiende, 2006).

Indigenous education still plays a very important role in modern African societies, not only in areas largely untouched by the Western ways of life, but also in the early years of many rural children who enter schools, as well as in their later years. There are considerable traditional cultural practices that they go through. In this respect, rural schoolboys and girls usually learn in two education systems, indigenous and exotic.

Even though African indigenous education is discussed here in relation to pre-colonial educational practice, the fact remains that aspects of traditional education are still much with us. African indigenous education is by no means static, it is dynamic. In rural Africa, where African culture still largely survives, African traditional education is not only lively, but also vibrant. In rural Africa, taboos enhance communal lifestyles. Like the ancient Egyptian education, African indigenous education is utilitarian and religious. Today, it has absorbed and integrated into its ethics new ideas from a variety of alien sources, notably, Islam, Christianity, and European and Asiatic cultures.

This paper discusses the common aspects of African indigenous education. Thereafter, a most graphic example of this education in the Keiyo is presented. Besides the Keiyo, an indigenous pastoralist tribe and other indigenous African people, including the settled agriculturalists, mixed pastoralists, and agriculturalists (both forest and savannah), still transmit their cultures through indigenous education.

Content of Education

The content of indigenous education grew out of the physical and social situation. It was determined by both the physical and the social environment. For instance, if a child's physical environment was dominated by mountains, plains, rivers, and forests, he/she had to learn how to utilize its productive aspects. He/she had also to learn the climatic features related to the physical surroundings.

These circumstances dictated the nature of economic activities that could be carried out; whether or not the dominant economic activities had to embrace cultivation, hunting, fishing, gathering, or pastoralism. From their earliest years, elders aimed to adapt children to their physical surroundings and to teach them how to use it. Within the homestead and its environs, parents and older relatives were responsible for the training on economic duties (Abiri, 2003).

Closely tied to the basic economic needs was the production of objects that had both practical and cultural value. Most societies had craftsmen in pottery, basket making, tanning, and iron-smelting for producing articles

like spears, axes, and shoes.

In most communities, such crafts were specialities of certain families and clans which became famous for their skills. Parents trained their children in arts which had been handed down from one generation to another.

Iron-smelting required a number of skills ranging from the careful selection of the best iron ore to pig iron working and smelting into correct shapes and sizes. Salt-making, in some communities, is too needed a particular art to refine it from its crude form into a purer variety to make it suitable for use. The carving of musical instruments was another important craft which required special craftsmen. These ranged from the making of drums to flutes, harps, horns, and xylophones. This reflected an advanced form of technical education with an apprenticeship system (Castle, 1966).

The social environment played a very important role in shaping the content of education. Children had to learn that they could not live alone, and the group made their life possible, they were demanded to conform to its manners and obedient to its laws and defense. The social environment had the objective of moulding the individuals into corporate memberships of the society. Therefore, they were taught about decency of speech and behaviour, respecting their elders and older family members, and sharing common tasks in the field and the homestead.

At adolescence, Children learnt that conformity to tribal ways involved avoidances and prohibitions. Through such ways (prohibitions), they came to learn that natural impulses has to be curbed in the interest of the community and a strict code of morality existed to achieve such an end, especially, with respect to relationships between the sexes which were regulated by strict rules and backed by severe sanctions.

The social environment offered a wide range of areas of knowledge. It involved the study of the history of the family, clan, and ethnic group, especially, the heroes who were recalled in songs and stories, not so much for their individual feats, but for their contribution to the general life of the people; the aim being to discourage individualism.

Children learnt oral literature. Since writing was still unknown, oral traditions which formed an integral part of the people's culture were developed to a very high level. The oral traditions reflected the people's way of life and were very well articulated. It was largely that the elders transmitted to the young the customs, beliefs, and experiences of the clan, chiefdom, and the ethnic group (Ocitti, 1973).

In all ethnic groups, a wide range of ritual ceremonies were used as a means of incorporating the young into the more adult groups. There were also feasts and festivals commemorating particular events which were meant to achieve the same end. There were initiation ceremonies connected with clan taboos, establishing the legitimacy of a marriage or birth, death, war, harvest, religion, and magic. All these, together with customs, culture, and the mode of living, constituted an important aspect of the social environment of the growing African children.

Most communities were rich in stories, riddles, proverbs, poems, songs, and lullabies. They were part of the oral literature reflecting every aspect of life and culture, as well as giving much information on African beliefs and thought patterns. They were an essential aspect of education, for everyone had to know them, since they were learnt at home within the family circle. Stories dealt with many aspects of life, for instance, the origins and history of the people, the great battles of the past, and the valiant fighters who fought for them. Some contained a moral lesson or a warning. Some gave answers to the deep questions of life, such as the universe and the behaviour of certain animals.

To a great extent, the harsh physical environment demanded a strict form of discipline so as to enforce law

and order. Such authority rested in kings and chiefs, and in their absence, any older person who was accorded the right should reprimand offenders, irrespective of family ties. Such authorities, as existed, recognized their correction as a national duty. Above the earthly authorities, were the powers of the ancestral spirits? The early discipline of the home formed part of the general educational policy for the younger generation leading to a military or naval training. Such methods varied from one ethnic group to another, but in all societies, boys practiced a number of skills in their games, which are likely to assist them in later battles. Discipline in the home was maintained by older siblings and elders.

Methods of Instruction

These can generally be divided into informal and formal methods of instruction.

Informal Methods

Among the informal methods of instruction, the first method was learning through play. In most communities, the importance of play was generally realized. A child who did not participate actively in play after "work" was normally suspected of being ill or even abnormal. Children were left to take their own initiative to make toys for play from their rich environment. They made toys of animals, houses, and people from local materials of their own choices and interests. They moulded from mud and clay, and made use of articles which they knew or thought of little use to adults. Children also engaged in make-believe play activities, which could be described as imitative, imaginative, and symbolic. They enjoyed imitating their parents or other grown-ups, especially in activities which they themselves would pursue in later years. Boys imitated activities which were appropriate to their sex. These included building huts of grass, digging, and hunting. Girls, on the other hand, participated in activities of the family and life in their homes. They imitated their mothers when they are cooking, grinding, and fetching water and firewood.

A popular form of play was wrestling, which was staged by children inciting each other. The provoked child or group of children took courage and accepted the challenge. To be declared a winner, one had to throw his opponent down until his back touched the ground. Children did not just wrestle for their own sake or for fun; they did so in order to become more proficient in the game, and also to compare their physical strengths. The child who had been defeated on a number of occasions by most of his age mates invariably became a laughing stock of the group and was considered as a weakling. On the other hand, the child who distinguished himself out as the strongest usually assumed the power of leadership of the peer group.

Other play activities included swinging, chasing one another aimlessly, sliding, dancing (dances were performed in moonlights, after evening meals, especially during the dry seasons), and riddles (riddles were generally designed to develop children's memory and promote their language).

Oral literature constituted an important method of instruction. This included teaching through myths and tales, which effectively described or accounted for natural phenomena, tales about gods or things which were beyond the understanding of man, such as death and the origin of man. Elders used myths to explain things which the young did not understand.

Allied to myths were legends. These were tales fabricated to account for real events that took place or were believed to have taken place in immemorial time. Like myths or fables, they sounded like fairy tales, but were fragments of actual history. They were, therefore, closer to real life than myths, real in the sense that they told about people or things that actually existed.

Closely related to myths and legends were folktales. These were not concerned with the explanation of natural phenomena, or the familiar situations, or recalled some ancient customs; they were based primarily on day to day happenings. Much of the ethical teaching that was given to children was through folktales, most of which had happy endings and involved triumph over difficulties. Virtues, such as communal unity, hard work, conformity, honesty, and uprightness were reflected in many of the folktales. Similarly, by listening to folktales, children learned a lot about human problems, faults, and weaknesses, which were calculated morals in a didactic form.

Children also learnt through dance and folk songs. Music formed an integral part of their daily lives. Many of the rites and ceremonies, feasts, and festivals were performed to the accompaniment of melodious music and dancing. Thus, ceremonies, feasts, and festivals were important sources of teaching. Adults made desirable religious doctrines, practices, and experiences available to the young largely through the medium of religious ceremonies and instructions arising out of such ceremonies.

Proverbs were used widely in ordinary conversations. A judicious use of proverbs was regarded as a sign of wit. They were the condensed wisdom of the great ancestors. In a given proverb, one or two moral ideals were contained in a single sentence. Proverbs, such as "a large number of rats does not scoop out their dwelling" is the same as "too many cooks spoil the broth", and "an aggressive elephant cannot develop a trunk", are used as a warning against mischief which is common in many communities. Most of the proverbs referred to different aspects of the socioeconomic and political life. There were proverbs dealing with cooperation and personal human qualities, authority, and domestic life. Others referred to a particular mode of production and relationships between children and parents, wives and husbands. Some of the codes concerned with the regulation of behavior, which were also embodied in proverbs. Old people and parents used them to convey precise moral lessons, warnings, and advice in dealing with their children, since they made a greater impact on the mind than ordinary words.

Traditional learning also involved the use of deterrence or inculcating fear in the children. Right from youth, children, whenever appropriate, were made to conform to the morals, customs, and standards of behaviour inherent in the clan where they were born or lived. Bad habits and undesirable behaviours, such as disobedience, cruelty, selfishness, bullying, aggressiveness, temper, tantrums, thefts, and telling lies were not tolerated. Usually, verbal warnings were used, and more often, followed by punishment. Children who committed offences would be rebuked or smacked or be assigned some piece of work which they were expected to complete before being allowed to eat. Serious offences, however, resulted in severe beating or some form of inflicting pain on the body. Such punishment was regarded as being reformatory. Sometimes, children were discouraged from indulging in what was regarded as a bad habit by being ridiculed with a funny or nasty nickname. Deception was another deterrent method, especially used with young children from acquiring what was regarded as bad habits.

Part of the informal methods of instruction included involving children in productive work. Learning through the medium of work enabled children to acquire the right type of masculine or feminine roles. Children learned by being useful and by doing and working hand in hand with adults. This kind of learning medium prepared children through a number of stages to be capable future husbands and wives. What was required was one's ability to perform the various farm or pastoral and domestic tasks.

Every mother, therefore, wanted her daughter to gain through mastering of the home management skills before marriage. Similarly, every father wanted his son to become at least a competent farmer or hunter or

fisherman or herdsman. Thus, of all the different aspects of educational training to which children were subjected, the one to which most attention was paid was probably what prepared them as prospective wives and husbands. A child was expected to learn this largely through seeing and imitating. He/she was given formal teaching usually after he/she had made a mistake or when the outcome of his/her work was found unsatisfactory. He/she was usually given a gradual process of training according to age and sex. First, the work that a child did usually increased in amount and complexity as he/she grew up; and Second, the physical ability of a child was also taken into consideration. Rarely was a child assigned a task which was beyond his/her physical fitness.

Another important consideration was sex. Although, there was a certain amount of overlapping in the simple tasks of both boys and girls before the age of six or so, the general rule was to establish sexual differences in most work of all sorts, in order to prevent girls from becoming "manish" and boys from becoming "womanish".

Formal Methods

Formal methods of instruction involved theoretical and practical inculcation of skills. For example, learning through apprenticeship was formal and direct. Parents, who wanted their children to acquire some occupational training, normally sent their children to work with craftsmen, such as potters, blacksmiths, and basket makers who would formally teach them.

The same was true with the acquisition of hereditary occupations. For example, an herbalist in handing over his secrets about medicine (the use, for which disease, and how), would instruct his child from time to time until he became knowledgeable and proficient in practice.

Formal instruction was given in the constant corrections and warnings to children, such as in some aspects of domestic work like herding cattle before setting out; cultivation and tending to certain crops; fishing; making children to know the wealth of folklore; teaching the everyday customs and manners of eating; greeting and how to behave with relatives and important people; preparing a girl to get married on the smooth running of a new home; and stressing parental and marital obligations.

Among some ethnic groups, formal education took the form of succeeding stages of initiation from status to status. At the age of about five, for example, the outer edges of a child's ears were pierced, at the age of 10 or so, the lobes of the ears, a visible indication that the child has advanced from childhood to boyhood or girlhood. But the most prominent of initiation practices are those associated with puberty which take the form of male, and in some ethnic groups, of female circumcision. This test is regarded as the point of passage into full membership of the community. It deliberately made a highly toned, emotional, and painful experience, and sometimes, covers a period of many months, which will be engraved for ever on the personality of the initiates.

Without circumcision, a man could not be regarded to be a full member of his ethnic group or have rights of property. Circumcision was normally accompanied with formal lessons. The lessons were in formal instructions and songs, and the instructor made efforts to test whether or not the initiate understood the lessons. Questions were asked in the form of riddles for the initiate to interpret the hidden meaning. Such questions dealt with issues pertaining to the protection of the homestead against enemies and committing adultery. In some communities, this involved making such tools as bows and arrows, the use of sharpened sticks for different weapons, and staging mock fights.

Stages of Development

Childhood

In most communities, the general attitude that people had towards the newborn was that of interest, encouragement, and well-wishing. The parents and close relatives, in particular, usually took keen interest in the welfare of a newborn and how he/she developed. The arrival of a new baby always brightened the family atmosphere and tended to strengthen marriage and ensure its continuity. Various ways and means were used to encourage a child to sit, crawl, and walk by giving him/her opportunities in order to overcome these developmental tasks. The trial and error method was extensively used to find out whether an infant was ready to sit, crawl, stand, or walk, particularly, when other equally healthy infants of the same age and sex were already sitting or crawling unaided (Wandira, 1973).

A child was given considerable assistance in other areas of development. Watching a child begin to talk with other people was quite exciting. Right from the stage when a child could display vocalization through the next stage when he/she could indicate his/her needs, feelings, and ideas by means of reflex sounds and feeble gestures and on the stage of babbling and developing word usage, a child was encouraged by adults to speak. As he/she began to articulate his/her speech, many questions were handled by adults. Through questioning, a child built his/her vocabulary; and through the same process, parents could get to know whether their children had learnt what they were believed to have learnt.

Morally, a child was made to conform to mores, customs, and standards of behaviour inherent in the clan where he/she was born or lived right from the time he/she was able to walk. Bad habits and undesirable or disruptive behaviours were not tolerated in any child. To inculcate good habits and character in their young children, many parents normally used incentive methods which included encouragement, rewards, approval, praise, and the like, and deterrent methods which included all forms of punishment.

Children were protected against dangers and all sorts of harm. There were many precautionary measures against fire, suffocation, accidents, and malignant glances. Infants and toddlers were not left alone in the kitchen; other measures were taken to protect children, they were not allowed to play with dangerous objects, protection from malignant illness, poison, or ill health, and in some instances, charm armlets were worn on the children's wrists or round their necks in some communities. Besides, children were strongly reminded from time to time not to eat any food offered by strangers or pick up any articles found by the wayside.

Illness was often attributed to natural and supernatural causes, a violation of clan taboos and observances, or to the work of the spirits. When a child fell sick, the mother usually made use of any herbal medicine known to her or she would probably invite a herbalist. If the treatment failed to have the expected results, then, a different cause was suspected. In many cases, a medicineman or diviner was consulted. He would invoke the ancestral spirits to find out which one had been offended and what atonement measure it wanted to be taken so that the patient could recover. In many communities, the spirit was usually appeased through a sacrifice, which together with the treatment given would make the patient recover.

In general, development from birth to six years, a child was educated in the family by the mother on whom he/she largely depended both physiologically and materially. Other members of the family interacted with the child in many ways. The father was involved as a complement to the mother. Starting at the age of six or seven, games occupied an important place in the education of children in conformity with the awakening of intense mental and physical activities. Listening to stories, legends, and riddles helped them build up and feed their

powerful imagination, and give them a solid basis for clarifying their ideas. All these activities had a physical aspect, which is essential to their development.

Between 10-15 years old, with the development of a child's ability for abstract thought and reasoning and the development of his/her personality, a child associated closely with social life, both actively in productive work and passively as a spectator of social relationships and public affairs more and more. At the same time, he/she was given a certain amount of independence in the family, along with increased responsibilities. It was during this period that he/she would start his/her apprenticeship in some occupations.

Adolescence and Adulthood

At around 15 years old, a child underwent puberty and became an adolescent with the anxieties which this changed entailed. In some communities, this was the period for initiation. Its content in educational value, fully responded to the circumstances. The emphasis on physical exercise, sexual education, awareness of responsibility, and the harmonious acceptance of the child into the community was stressed with special force. The ritual ceremonies and impressive activities indicated the intense interest shown by the entire community in this event in the life of the adolescent.

After initiation, the adolescent was prepared for life and completed training with elders. He perfected his craft, accumulated experience, participated more fully in social life, and assumed more of his responsibilities as a man towards other men. After marriage, he passed through the final door to complete adulthood.

In this regard, African indigenous education embraced character building, as well as the development of physical aptitudes. The acquisition of the moral qualities felt to be part of manhood and the acquisition of the knowledge and techniques needed by all men to take an active part in social life in its various forms, it did not differ from those of education in societies living in other parts of the world. The effectiveness of this education was possible because of its very close relationship with life. It was through social activities and social relationships that education was carried out. Children learned everywhere all the time instead of learning circumstances determined in advance as to the place and time, outside the productive and social world (Scalan, 1964).

On methodology, African indigenous education revealed a profound knowledge of the psychology of children. Different age-groups corresponded generally to the different stages of mental and behavioural development of children. The methods employed in each of these stages showed a striking evidence of adapting to the physical and psychological potential of children which of necessity required knowledge and understanding of the fundamental characteristic of "personality" at each new stage of a child's development.

Indigenous Education: The Case of the Keiyo

Before colonization, the Keiyo practiced indigenous education, like any other systems of education, which served as an instrument that transmitted values, skills, knowledge, and culture from one general to another. The content of this education was the sum total of the experiences of the family, clan, and the Keiyo tribe. Its curriculum was based on the immediate environment.

The Keiyo children were brought up by learning about the weather and the landscape from the physical environment as they related to the predominant mode of production which was agro-pastoralism. They were acquainted with the problems and possibilities of exploiting it. Knowledge about grazing pastures, salt licks, water wells, and rivers was imparted into the Keiyo children.

The philosophy of the Keiyo education rested on the principles of communalism, functionalism, holisticism, and perennialism. Children were brought up largely by the process of socialization as opposed to the process of individualism. Every child was brought up to be a social being who are capable of entering social relations with other social beings which made up the clan and tribe. Freedom of an individual was subordinated to the interests of the tribe, and cooperation was preferred to competition. Nowhere was these principles better demonstrated than in the Keiyo age-set system.

The basis of unity was a sentiment of loyalty to the elders in each age-set system and all the related social activities, such as clans observing taboos, rituals, ceremonies, communal ownership, and responsibility. Children were brought up or prepared to become useful members of the Kowet and the age-group. Girls were brought up as future wives and others through participation in missions pertaining to domestic duties. Boys were brought up in association with their fathers and other male adults to become well-versed in agro-pastoralism (Chang'ach, 2011b).

Education reflected the agro-pastoral nature of the society in which the population was mobile, and land and property were held in common rather than owned by individuals. Although, the territory and location of the region were constantly changing within the boundaries of the three eco-zones, i.e., the highland, escarpment, and the valley floor, the social structures were organized to provide for cohesion among the society's members, despite continual movement of the individuals and the division, re-combination, and geographical relocation of the communities and social groups.

Children were and still are valued by the Keiyo community. They are a focus of interest and attention. Their presence is the only certain thing that can stabilize marriage and enhance the status of the parents, and the more children they have, the more respectful the family is thought to be. With a number of children, especially sons, a man can hope to build up his herds and lead a more active life in the assemblies of the elders and in discussion. While, his daughters, after their marriages into worthy families, which represent an asset to him and his closer kinsmen, he can look to their allotted herds for an added source of revenue.

Training begins from early childhood. At the age of four or five, a child's lower incisors are removed. He/she is mainly charged with the responsibility of looking after lambs and young claves around the Kowet. The next stage comes at the age of about six to seven, when the top of the right ear lobe is pierced. During this period, a child's role is to look after older calves, as well as accompany older persons in herding cattle. A child also participates in many games played by other children. In the mornings, while cattle are resting after milking, children hurl dry cowdung at each other and practice high-jumping. In the evenings, they chase each other around the home enclosure, play games with charcoal, learn stories, riddles, proverbs, and sayings.

At a later age, children are entrusted with the responsibility of looking after cattle. Holes are then made in the lower lobes of both ears. By this time, the boys are regarded as being mature enough to be able to undertake responsibilities, such as moving sheep or cattle to new pastures. Girls, on the other hand, help mothers in domestic responsibilities. These include building of huts and controlling activities that go inside them, preparation and distribution of food, sleeping arrangements, entertainment, making milk containers, leather costumes, and fetching water.

Taita (1992) argued that the boys practically did nothing other than looking after cattle. During the whole period, certain features characterized the uncircumcised boy (ng'eteet). He does not put ornaments in his pierced ear lobes and does not carry a steel while spear. He sometimes carries a quiver, decorates himself with olive tree branches, as well as putting plants in his ears to keep the lobes distended. An uncircumcised girl does

not decorate her ears or wear loin cloth, and this distinguishes her from married women.

Circumcision among the Keiyo marks entrance into the age-set system. Prior to this, a boy (ng'eteet), is normally treated as a person without status, few rights, and one with many labours connected with herding cattle, sheep and goats. The majority of his preceding years have been spent in constant herding, yielding little by way of social or material reward. Circumcision, therefore, lifts the boy above his age-category and marks his initiation into a formalizing age-group. It gives him structural status and social prestige. He is now noticed and acknowledged as "manly". He is both permitted and expected to develop and exhibit vigorous and virile qualities that characterize the Keiyo. The circumcision ceremony, "kamuratanet" (Kibnya'aanko, 2009), is supposed to inculcate qualities, such as individual reliance, group cooperation, and ritual support. It is the individual's most important "rite of passage" and the group's strongest affirmation of solidarity. It is the basis of the entire age-set system and it gives both substance and direction of group behaviour (Chang'ach, 2013).

After circumcision, the boys graduate into the second stage of male life cycle "warriorhood" (murenik). Although, women are not grouped in cooperate age-set like men, they tend to be identified in status with the male age-set, with whom they danced as young unmarried maidens. The regular progression of cooperative age-sets through a fixed system or ranked stages of the life cycle establishes a status of hierarchy to which ideal modes of behaviour and authority are related. One age-set is automatically senior to the next, and several age-sets are always senior to those just performing. Thus, one group ought to pay respect and deference to all groups above it and receive respect and defence from all those below it. They prescribe the functions of each set.

The two warrior age-sets constitute a corps of able-bodied persons who are both able and expected to perform service for the community. Freed from household chores and cattle responsibilities, junior warriors are expected to roam the country familiarizing themselves with details, as well as performing such tasks as assisting any elder in the labours of dry seasons, watering cattle, carrying messages, escorting women over long distances, and ensuring herds, boys are carefully watching over cattle, reporting on the conditions of pastures and water, and keeping their Kowet camps safe from alien thieves and their livestock secure from predators.

During the second or third year of junior warriorhood, age-mates from one or more localities band together in a warrior village, Kowet village. In the past, warrior villages played an important role in the defence of tribal territory, as well as an arena from which small groups of warriors would raid neighbouring tribes for cattle. But defence and raiding were not the only, or even more important, functions of warrior villages; they also served as basic educational institutions. They were the forum in which young men were expected to develop those speaking and debating skills necessary for domestic administration of their land (Chang'ach, 2011c).

It was mainly the warrior village that the Keiyo children learnt the traditions and expectations of social life in their society. Prior to this, boys were limited to the day long isolation of cattle herding. Even today, the importance of Kowet life for the Keiyo is that it provides both the opportunity and leisure where young men may acquire the necessary knowledge of their society under the periodic instruction of the elders.

Senior warriors, who range from 18-26 years old constitute a less homogenous set of roles. Although, they are permitted to marry after the "sagetab eito" ceremony, which promotes them to senior warrior status, they are still regarded as a group of persons to whom the community at large may turn for public services. Like the junior warriors, they assist in the ardous task of watering stock in dry seasons. They observe the same prohibitions like the junior warriors, namely never to drink the milk of one's own family herd. In addition, they

are prohibited from chewing tobacco, drinking honeybeer, participating in council discussion, and managing their own cattle. Activities, which traditionally were the sole prerogative of elders, but today, they are rapidly breaking down. They acquire the rights of elderhood, "murenik", as an age-set by performing the "sagetab eito" ceremony which is generally conducted on a tribal basis once approximately every 13-15 years. This ceremony involves drinking milk by the warriors. After becoming elders, leaders, and spiritual leaders, "kirgwogik" are identified. The senior or ancient elderhood, "boisiek" follows.

The main function of the age-sets in the Keiyo community was to provide a permanent source of manpower for fighting. Through age-sets, they were taught discipline and respect. For elders, they thus affect behaviour patterns. An attitude of respect is required of junior to senior age-sets, while, between members of the same set, there is a relationship of equality and a sense of solidarity in their relations with other sets. Membership of a set also involves restrictions on both pre-marital and marital relations (Chang'ach, 2011a).

Keiyo community valued ceremonies highly. It was during such occasions that members of different clans met and discussed the welfare of the tribe. It was also at this time that leaders mobilized young men for specific tasks. Most ceremonies were accompanied by drinking blood and milk, roasting meat, eating honey, and entertainment by dances and songs. The age-set system initiation ceremonies and rituals were among the most important institutions through which indigenous education was propagated (Chebet & Dietz, 2000).

Conclusions

Indigenous education was undoubtedly effective in pre-colonial period. Today, this good education, as already discussed earlier is being ignored and left to fall into oblivion, chiefly because of its irrelevance in a modern world which appears different from African past. Its purpose can no longer enable children to adjust themselves comfortably to modern dynamic life.

However, traditional education has an important bearing to modern education. Indigenous education cannot necessarily be seen as opposites since there are ways through which they could supplement each other. In a nutshell, indigenous education involved children in real life situations. Indigenous preparation was guided by the principle of learning by doing. Children received functional learning which largely prepared them to live and work on land, as well as in specialized occupations. Western education, on the other hand, seems to prepare children to despise the land and manual work, to seek white collar professions and to live in towns. An important implication of modern education is that it is work-oriented.

Other important aspects of traditional education which should not be left to fall into oblivion include values, folktales, songs, dances, children's rhymes, and play activities and traditional games. As already seen, indigenous education tends to reflect the values, wisdom, and expectations of the community or the wider society as a whole. Western education, on the other hand, tends to stress the intellectual development of the individual, while paying less attention to the needs, goals, and expectations of the wider society. The solution to such a situation does not lie in abandoning one form of education for another. Formal education system has an important role still to play in African societies, but if such system has to meet the cultural, social, moral and intellectual, as well as political and economic needs, it ought to be indigenized. This is an area where the study of African indigenous education will be of particular significance and relevance. The philosophy, methodology, and schooling in Africa need to be reshaped and moulded to reflect some of the traditional ideas and perspectives. In this regards, the views, opinions, and assessments of past and contemporary African educationists, who have become aware of the needs and goals of the various African societies through research

and experience, must be considered. Not much serious educational planning can be undertaken without identifying such specific needs and goals. This, of course, also calls for an articulation of a sound African inspired philosophy of education in which the curriculum and methodology of indigenous and Western forms of education can be integrated.

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Out of Classroom Projects for Biodiversity Education in Hungary: A Case Study

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The first part of this study deals with the theoretical background of the terms of biodiversity, education for biodiversity, and outdoor education. After that, the paper reports on BE (biodiversity education) and OCL (out of classroom learning) programs in formal and non-formal education in Hungary. The main part of this study presents the results of baseline and needs analyses survey in relation to biodiversity education and OCL programs. This survey was elaborated during one of our out of classroom projects, called BEAGLE (Biodiversity Education and Awareness to Grow a Living Environment). This project is an example of how to organize OCL projects and how to monitor biodiversity in or near school areas. Unlike study trips, the BEAGLE project does not require extensive preparations. Classrooms can be the bases for learning, but if classroom learning experiences are combined with the benefits of an outdoor project, the learning process becomes an adventurous and enjoyable activity. In this way, learning can be brought closer to life; it may become a relevant and life-like experience.

Keywords: out of classroom project, BE (biodiversity education), outdoor education, baseline and needs analyses survey

Introduction

In recent years, people have begun to understand that they do not care about the impact of their activities on other living beings they share the planet with. Biodiversity loss has accelerated to an unpredictable level worldwide and that is why biological diversity or biodiversity is the most important term in conservation; it encompasses the richness of life and its diverse patterns. Biologists often define "biodiversity" as "the totality of genes, species and ecosystems of a region" (Wilson, 1992; Juhász-Nagy, 1993; Huston, 1994).

Biological Diversity and Biodiversity Education

Biodiversity means the variety of ecosystems, species, and genes that can be found around us. It is our life insurance, giving us food, fresh water, clean air, shelter, and medicine; that is why we have to approach the issue of biodiversity in a holistic way, from an ethical, emotional, environmental, and economic perspective as well. If humans' activities lead to biodiversity loss, we lose habitats and species, as well as our wealth and

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employment that we derived from nature; simply, we endanger our wellbeing (Gaston, 1996; Standovár & Primack, 2001).

The CBD (Convention on Biological Diversity) was declared with the aim of protecting the richness of life. CBD was declared in Rio de Janeiro in 1992, and Hungary joined it in the very same year. Leaders of the world recognized that the world needs youth who grow up educated, and who, eventually, will be able to make more informed, responsible, and constructive decisions to conserve and protect the quality of the environment. That is why one of the sections of the CBD deals with education for biodiversity, or in other words, biodiversity education.

Humans have difficulty in understanding biodiversity in its full complexity. To put this concept in a clear perspective, first, we have to deal with biodiversity on a small scale. School grounds and nearby spaces are ideal places for learners to grasp the elements of biodiversity. Eventually, they understand that many small steps can make a positive change in the natural environment surrounding us. Our individuals' little efforts accumulate and help conserve and protect the richness of biodiversity. The elaboration of out of classroom environmental projects creates good possibilities for us to take that particular first small step toward protecting the living environment (Schiff & Smith-Walters, 1993). Before we move on to describe two examples of outdoor education projects, it is necessary to clarify what is meant by the concept of outdoor education.

Outdoor Education

The term "outdoor education" is used broadly to refer to lots of organized activities that take place in a variety of ways in outdoor environments. Outdoor education can be implemented in various ways, depending on the cultural context. We agree with Priest (1986), who defined the term of outdoor education from a broad perspective: "Outdoor education is an experiential process of learning by doing, which takes place primarily through exposure to the out-of-doors. In outdoor education, the emphasis for the subject of learning is placed on RELATIONSHIPS, relationships concerning people and natural resources" (p. 13).

Priest's (1986) definition is based on six major ideas which are as follows:

(1) Outdoor education is a method for learning;

(2) It is experiential;

(3) It takes place primarily in the outdoors;

(4) It requires the use of all senses and domains;

(5) It is based on the interdisciplinarity of the curriculum;

(6) It emphasizes relationships concerning people and natural resources.

Priest quoted Hammerman, D. R., Hammerman, W. M., and Hammerman, E. L.'s (1985) remarks about outdoor education in the following way:

> The term outdoor education has been applied in various ways… Conservationists for example may perceive outdoor education as relating primarily to the wise use of natural resources… Environmentalist may see outdoor education as a means of assisting each student in developing an attitude of personal responsibility for finite and fragile environment. (Priest, 1986, p. 15)

Out of classroom education is described by school curricula worldwide. Most developed countries have associations and institutes to promote OCL (out of classroom learning). In this paper, our purpose is not to present the history of outdoor education, but to demonstrate the most important aims of outdoor education.

The most important general aims of outdoor education are as follows:

(1) Promote a deeper relationship with nature;

(2) Improve problem-solving skills;

(3) Enhance teamwork;

(4) Develop leadership skills;

(5) Understand natural environments;

(6) Promote spirituality.

BE (Biodiversity Education) and OCL in Hungarian Schools in Formal Education

Primary School

In the first six years of Hungarian primary schools, there are subjects called Basics of Environmental Science and Basics of Natural Sciences, both of which comprise biodiversity-related topics. At the same time, there are other possibilities at teachers' disposal to provide their pupils with some OCL experience. Biology, as a school subject, is introduced in the 7th grade class at first, and it deals with the typical types of vegetation, describes the fauna of certain climatic zones, and outlines some ideas about the biodiversity of wildlife, diversity of habitats, as well as the supraindividual taxonomic categories. The transmission of these topics is mainly teacher dependent. However, this period represents the biggest potential to teach about the importance of nature and the living environment to children. In the 8th grade class, the topics in biology include the structure, the functions, and the mechanism of the human body. It is quite difficult (but not impossible) to find links between these topics and biodiversity. There are opportunities in the classroom to learn about nature, its herbs and plants when elaborating on topics like healthy lifestyle and diets. Unfortunately, due to the latest curricular reforms, the average number of weekly natural science and biology lessons has been reduced in Hungarian primary schools.

Secondary School

There are three basic types of secondary schools in Hungary: the grammar schools, vocational schools, and grammar schools with special curricula. The number of natural science lessons has also been reduced in Hungarian secondary schools. In general, biology is missing from the curriculum of the first class of secondary school. It is only geography which is obligatory in the first year. Biology is introduced in the 10th grade class in most schools. The topic of biodiversity is introduced in the curriculum only in the 10th grade, and after that in the 12th school year. Actually, in certain schools, natural sciences are taught in an integrated form. In the 9th grade class within the framework of geography, physical geography is taught with several topics taken from the area of natural sciences. In these topics, there are also references to biodiversity, for example, when discussing wildlife in various climatic zones.

There are some specialized schools which offer a transition between primary and secondary schools. It means secondary education lasts six or eight years. In these types of schools, there are special curricula with the aim of avoiding the unwanted repetition of topics. It means that students learn natural sciences uninterruptedly during their school years, and curricula can be built up logically.

In some other cases, there are schools with specialized subject-oriented classes and curricula. Special curriculum means more weekly lessons of the given subject(s). For example, if a class is specialized in biology, there are 3-5 lessons on a weekly basis, as opposed to the 1-2 lessons per week in the regular program. In the

former case, teachers are free to prepare the biology curriculum on their own.

The international network of eco-schools is coordinated by the Hungarian Institute for Educational Research and Development. The eco-schools network has been running since March 2000, as the Hungarian part of the Eco-schools program of the ENSI (Environmental and School Initiatives) project, which is a project of the OECD-CERI (Organization for Economic Co-operation & Development—Centre for Educational Research & Innovation). It is generally known that today mankind has to face an environmental crisis. Consequently, promoting environmental awareness is one of the most important tools of coping with this crisis. Eco-schools can contribute to this aim by educating environmentally responsible citizens. There are many differences between eco-schools and ordinary schools. All areas of education are imbued with the idea of sustainability, but in eco-schools, this idea is typical of how all extracurricular activities are organized. Sustainability is manifested in school management, catering, and environmental projects as well. In general, there are more out of classroom environmental programs in eco-schools than in ordinary schools. The quality criteria for the being an "eco-school" is a sizable green-area in the schoolyard or somewhere near the school. Consequently, eco-schools offer more possibilities to do BE and OCL.

Unfortunately, field studies or OCL programs are not obligatory in the national curriculum in Hungary; field trips are recommended instead, which, as we have seen, are more difficult to organize.

Teacher Training Programs

In the last decade, the whole structure of teacher training underwent a considerable change as we were facing the transition from the one-cycle four- or five- year scheme to the one that conforms to the requirements of the Bologna process, i.e., three years of bachelor level and two years of master level training. In a few years time, the higher education system is going to change again for the one-cycle five-year scheme, which will be back in Hungary soon. In these systems, the students of biology and geography—in both the primary and secondary school teacher training programs—generally have a possibility to learn about the methodology of field studies or OCL within the framework of the methodology of teaching biology or geography. However, there are more possibilities to learn about the methodology of field studies or OCL in the training programs of lower primary teachers and nursery school teachers. Student teachers may come to know the programs and the methodology of field studies parallel with the basics of zoo pedagogy. They visit the university botanical garden and familiarize themselves with forest schools and national parks as part of their curriculum. Although, there is no compulsory course within the formal curriculum elaborating on the methodology of field studies/OCL .

BE and OCL in Hungarian Schools in Non-formal Education

There are lots of NGOs (non-governmental organizations) or green associations in Hungary, but three of them need to be emphasized, which support and help non-formal BE and OCL. One of them is the Hungarian Ornithological and Nature Conservational Association, which aims to protect wild birds, and thus, it helps to preserve biological diversity. It was established in 1974, and it has about 10,000 members in Hungary. This association also promotes environmental education at several levels. It has a Bird-Friends program which is relevant for children of different age groups, this program includes: (1) Bird-Friends Nursery Project; (2) Bird-Friends School Project; and (3) Bird-Friends Garden Project. In this program, there are 253 participating schools and as many as 5,013 members (MME hírek, 2012).

The second "green" organization of importance is called Green Heart Youth Movement for Nature Conservation. The motto of this organization is to educate children to be respectful and loving toward nature. This organization has about 6,000 members. It organizes activities in and out of schools. Participating children choose an environmental topic to monitor and "adopt" in their neighborhood. They can adopt (protect) anything that is part of nature, a river, a stream, a meadow, woodland, wetland, etc.. It is practical to choose a place in the vicinity of the participating children's home, so they can get there easily. The leaders of the groups are teachers, who are committed to environmental education. With their help, children gain knowledge and become fond of and respectful to nature. The basic principles are written down as the "Ten Rules of Green Heart"; they are expected to be kept by all members. These rules provide the proper basis for environmental education. The movement helps the leaders and the children to acquire professional knowledge, as well as proper methods with the help of training courses and workshops.

The third example of green organization is the Hungarian Society for Environmental Education, which is mainly aimed at organizing teacher training sessions in the area of EE (environmental education) and education for sustainability. It is also one of the main goals of this organization to increase environmental awareness, provide knowledge, and teach responsibility to those who regard EE as a mission for themselves. The entire Hungarian society can be educated through the example of these dedicated people. The Hungarian Society for Environmental Education collects and disseminates knowledge and methodology, and in addition, it helps environmental educators to organize indoor and outdoor programs; it develops ethics based on the respect of nature and man; it popularizes environmental practices; and it shows how to become environmentally responsible citizens and reduce the ecological footprint of schools. This association runs many national and international projects in relation to EE or education for sustainability. One of these projects is called BEAGLE (Biodiversity Education and Awareness to Grow a Living Environment). The BEAGLE project was financed by the European Union. The author of this paper (Fűzné) was an expert-member of the Hungarian team and participated in the elaboration and implementation of the project from 2008-2010. The aim of this project was to improve the knowledge of both teachers and university students about biodiversity and sustainable development by providing electronic and printed educational materials and tools used in the education of biodiversity taught outdoors. Schools from six countries were invited to participate, Germany, Hungary, Norway, Poland, Slovakia, and the United Kingdom. Each school carried out simple biodiversity observations based around trees and entered this information on to the BEAGLE project international (http://www.beagleproject.org) and national Websites (http://www.mkne.hu). There were trees in each school ground and local parks, and that is why every student had a possibility to choose and monitor a tree near the school. The schools were monitoring six species of trees, which are listed below:

(1) Oak (quercus species);

(2) Beech (fagus sylvatica);

(3) Horse chestnut (aesculus hippocastanum);

(4) Birch (betula species);

(5) Rowan (sorbus aucuparia);

(6) Lime (tilia species).

Information was gathered and consequences drawn to see how different stages of tree life-cycles take place across Europe throughout the year. Data were compared with former results and factors, such as climate

change to see the influence that humans are having on the natural environment[1].

The main steps of the BEAGLE project were as follows:

(1) Calling all schools to join the BEAGLE project;

(2) Registering of the schools;

(3) Baseline and needs analysis surveys;

(4) In-service teacher training program for monitoring biodiversity, data collection, and analysis;

(5) Monitoring of the chosen trees;

(6) Analyses and interpretation of the results by individual schools;

(7) Project summary and evaluation.

As it can be seen from the above, at the beginning of the BEAGLE project, we made baseline and needs analyses surveys. In the next part of this paper, the findings of this survey will be described.

Needs Analyses Survey of BE and OCL Program

Six countries, Germany, Hungary, Norway, Poland, Slovakia, and United Kingdom were involved in this survey. In total, 501 teachers responded to the questionnaire.

Questions were related to BE and OCL. They were as follows:

Question 1: How often do you do OCL in a school year? (see Table 1).

Table 1

How Often Do You Do OCL in a School Year

1	Once a year
2	2-3 times a year
3	4-5 times a year
4	Monthly or more often
5	Never, we do not do OCL

Below, the most frequent responses are shown in Table 2.

Table 2

The Most Frequent Responses to Question 1

Country	2-3 times (%)	4-5 times (%)
Germany	50	17.4
Hungary	**24.4**	**37.8**
Norway	42	24.5
Poland	43	18
Slovakia	30.5	41.9
United Kingdom	35.7	36.9
Average	**33.6**	**29.4**

Note. Hungarian and average results are highlighted with bold characters.

Question 2: Which might be the appropriate areas for investigating biodiversity? (see Table 3).

The following list shows areas that may be found near your school and which might be appropriate for investigating biodiversity (tick those, which can be found in or near your school).

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[1] Further information is available on the international website about the BEAGLE project: http://www.beagleproject.org and in the same author's previous publications (Fűzné, 2013). Very thankful for the work and help of Hungarian and international team.

Table 3

Which Might Be the Appropriate Areas for Investigating Biodiversity

1	Green area on school premises
2	Local park
3	Natural habitat (uncultivated area)
4	Urban area other than park
5	Degraded area
6	Cultivated area

In Table 4, you can see the most frequent responses. It was possible to tick several answers in this question.

Table 4

The Most Frequent Responses to Question 2

Country	Green area on school premises (%)	Local park (%)	Natural habitat (%)
Germany	13.9	23.1	27.8
Hungary	**83.7**	**81.4**	**76.7**
Norway	12	39.4	90.4
Poland	30.1	38	18.3
Slovakia	30.5	24	22.4
United Kingdom	85.4	53.7	65.9
Average	**42.6**	**43.2**	**50.2**

Note. Hungarian and average results are highlighted with bold characters.

Question 3: Does your school face any difficulties when doing OCL? (see Table 5).

Please evaluate the following statements (1—Not difficult at all, 2—Not difficult, 3—Some aspects are difficult, some are not, 4—Difficult, and 5—Extremely difficult).

Table 5

Does Your School Face any Difficulties When Doing OCL?

The school's financial situation	1	2	3	4	5
Lack of time to do OCL in the face of strict core curriculum	1	2	3	4	5
Lack of good projects and teaching materials	1	2	3	4	5
Manpower	1	2	3	4	5
Suitable out-door areas	1	2	3	4	5
Safety regulations and difficulty of controlling pupils during OCL	1	2	3	4	5
Analysis of collected data, e.g., using the Internet	1	2	3	4	5
Identification of plants and animals	1	2	3	4	5

The most frequent responses are shown in Table 6. Some of them seem to be real obstacles (3 + 4 + 5 grades on the Likert Scale).

Table 6

The Most Frequent Responses to Question 3

Country	The school's financial situation (%)	Lack of time for OCL in the face of strict core curriculum (%)	Lack of good projects and teaching materials (%)
Germany	50	77.7	67.4
Hungary	**53.4**	**49**	**31**
Norway	65.9	52.1	53.7
Poland	10.8	91.5	5.4
Slovakia	58.2	66	60.4
United Kingdom	50.6	74.7	34.2
Average	**48.1**	**68.5**	**42.0**

Note. Hungarian and average results are highlighted with bold characters.

Question 4: Do you have any experience in leading practical biodiversity explorations? (see Table 7).

Table 7

Do You Have any Experience in Leading Practical Biodiversity Explorations

1	No, I do not have.
2	No, I do not have, but I would like to learn the ways of investigating or monitoring of the living environment.
3	Yes, I have some experience.

The most frequent responses are shown in Table 8.

Table 8

The Most Frequent Responses to Question 4

Country	No, I do not have but I would like to learn the ways of investigating or monitoring the living environment (%)	Yes, I have some experience (%)
Germany	19.4	78.6
Hungary	**66.7**	**26.7**
Norway	26.6	70.2
Poland	58	47.0
Slovakia	41.1	34.6
United Kingdom	19.2	42.3
Average	**38.5**	**49.9**

Note. Hungarian and average results are highlighted with bold characters.

Question 5: Which of the following would be helpful for you when doing OCL? (see Table 9).

Table 9

Which of the Following Would Be Helpful for You When Doing OCL

In-service teacher-training program for monitoring biodiversity, analyzing methods, collecting data	1	2	3	4	5
Practice-oriented in-service teacher-training program focusing on out of classroom learning	1	2	3	4	5
Guide to identify plants and animals	1	2	3	4	5
Lecture which analyzes the relationship between living nature and climate-change	1	2	3	4	5
On-line teaching materials for OCL	1	2	3	4	5
Internet consultancy	1	2	3	4	5

Table 10

The Most Frequent Responses to Question 5

Country	On-line teaching materials for OCL (%)	In-service teacher-training program (%)	Internet consultancy (%)
Germany	79.5	51	51.5
Hungary	**97.7**	**97.8**	**82.2**
Norway	80.3	79.2	75
Poland	40.6	50	56.3
Slovakia	82.2	91.8	76.7
United Kingdom	76.1	41.9	61.1
Average	**76.0**	**68.6**	**67.1**

Note. Hungarian and average results are highlighted with bold characters.

Evaluate each statement by using the following scale: 1—Not necessary for me, 2—Might be useful if specific to my needs, 3—Would be useful to improve my teaching, 4—I would like this, and 5—Very important for me.

The most frequent responses are shown in Table 10 (considering 3 + 4 + 5 on Likert Scale).

Question 6: In your view, how would your pupils benefit from investigating biodiversity through out of classroom learning? (see Table 11).

Evaluate each statement by using the following scale: 1—Strongly disagree, 2—Disagree, 3—Undecided, 4—Agree, and 5—Strongly agree.

Table 11

How Would Your Pupils Benefit From Investigating Biodiversity Through out of Classroom Learning

The process of investigation biodiversity with primary or secondary school students is only the experts' or scientists' task.	1	2	3	4	5
OCL improves the motivation of pupils to protect biodiversity and the environment.	1	2	3	4	5
The pupils are not interested in monitoring biodiversity, because it is too difficult for them.	1	2	3	4	5
It is important, because we can enhance learner awareness with these methods for sustaining biodiversity.	1	2	3	4	5
Exploring biodiversity can help students act with more responsibility to nature and each other.	1	2	3	4	5
Working outside the classroom helps to develop cooperative and team working skills of students.	1	2	3	4	5

The most frequent responses are shown in Table 12.

Table 12

The Most Frequent Responses to Question 6

Country	OCL improves the motivation of pupils to protect biodiversity and the environment (%)	Exploring biodiversity can help students act more responsibly towards nature and each other (%)	Working outside the classroom helps to develop the cooperative and team working skills of students (%)
Germany	92.6	92.1	95.1
Hungary	**97.7**	**97.8**	**100**
Norway	87.2	77.6	80.8
Poland	75	50.6	43.2
Slovakia	83.2	77	80.2
United Kingdom	94.5	91.7	98.7
Average	**88.3**	**81.1**	**83**

Note. Hungarian and average results are highlighted with bold characters.

Question 7: In which of the following actions did you participate already, or would consider doing it at your school? (see Table 13).

Table 13

In Which of the Following Actions Did You Participate Already, or Would Consider Doing It at Your School

Carry out a biodiversity survey at your school	1	2	3
Create a biodiversity area of native plants	1	2	3
Encourage birds to come by providing suitable habitat and bird feeders for them	1	2	3
Join an environmental project or scheme, e.g., eco-schools and forest schools	1	2	3
Create a small-scale nature trail	1	2	3

One of the goals of the BEAGLE project was to enhance learning about biodiversity; this aim could be reached through improving the natural environment within your school. In which of the following actions did you participate already, or would consider doing it at your school?

Evaluate each statement by using the following scale: 1—We do this already, 2—We would be interested in this, and 3—We do not wish to do this.

The most frequent responses are shown in Table 14 (considering 1 + 2 on Likert Scale).

Table 14

The Most Frequent Responses to Question 7

Country	Carry out a biodiversity survey at your school (%)	Encourage birds to come by providing suitable habitat and providing bird feeders (%)	Create a small-scale nature trail (%)
Germany	89.7	82.3	77.4
Hungary	**91.1**	**88.9**	**75.5**
Norway	92.5	63.8	79.2
Poland	50	45.3	48.3
Slovakia	72.9	93.2	83.3
United Kingdom	91.9	86.1	77.1
Average	**81.3**	**76.6**	**73.4**

Note. Hungarian and average results are highlighted with bold characters.

Summary of the Hungarian Results of the Survey as Compared With the Average of Six Countries

Forty-five Hungarian teachers responded to the questionnaire of the BEAGLE survey. Similar to the SWOT (Strengths—Weaknesses—Opportunities—Threats) analysis, we grouped the results and the responses into three categories: (1) strengths; (2) weaknesses/barriers; and (3) needs/support for teachers.

Strengths (These Facts Made the BEAGLE Project Successful)

Most Hungarian schools have access to some areas in their school grounds (83.7%), which can be used for OCL, meanwhile, the average of six countries was only 43.2%.

Most of the Hungarian teachers (91.9%) have done OCL within or near their school grounds. We have to mention that most teachers (68.8%) who joined the BEAGLE project had already participated in the Bird-Friends school project, a Hungarian project.

Most Hungarian teachers have been greatly interested in OCL. Thirty-seven point eight percent of Hungarian teachers answered that they had already been part of OCL activities 4-5 times, and 24.4% of the teachers answered that they had taken part in OCL activities 2-3 times during past school year. These teachers were there to help their inexperienced colleagues during the preparatory in-service teacher training program.

Every Hungarian teacher thinks that working outside of the classroom helps improve the cooperative and team working skills.

Teachers are aware of the problems, too. But, even though, there are some difficulties, most teachers are willing to invest their time and energy in these programs.

Weaknesses/Difficulties (Improvement or Some Decrease was Experienced Owing to the BEAGLE Project)

The biggest problem in Hungary was that schools had to face financial difficulties (53.4%); at the same time, the responses of teachers of other European countries highlighted strict core curriculum as their chief problem (68.5%).

For some of the teachers, group size was a problem, too. In the United Kingdom, Hungary, and Poland, it

could create financial problems if more than one teacher wanted to go outside with a class, even though this would be important for safety.

Some teachers mentioned that OCL can be implemented only if they switched lessons with their colleagues. Another frequent problem was the lack of time to do OCL. Some teachers mentioned that there was a lack of interest to do extra, optional activities in their free time.

Some Hungarian teachers mentioned the lack of appropriate teaching material for biodiversity education (This was an opportunity for the Hungarian expert team of BEAGLE project to work on new teaching materials. As a result, during the in-service teacher training program, participating teachers were provided with appropriate teaching materials for their own biodiversity education teaching experience).

Needs/Support for Teachers (We had Emphasized This Issue During the In-service Teacher Training and Within the Process of the Development of Teaching Aid)

Hungarian teachers rated in-service teacher training as the most important aid for monitoring biodiversity (97.8%). About the same percentage (97.7%) highlighted the importance of on-line materials in OCL.

Some of Hungarian teachers mentioned that not all schools had Internet access, although, at the same time, they considered Internet consultancy as a very effective way of acquiring information on biodiversity. They also appreciated direct cooperation with scientific institutions and personal meetings with biodiversity experts.

Conclusions

Evaluating the results of our survey (501 respondents from six countries with 45 Hungarian teachers among them), we feel that its findings cannot be generalized, as most teachers (77.1%) have already done OCL or are interested in it. Many participating schools cooperate with field studies centers, forest schools, and other NGOs. On the other hand, the results underlined the importance of appropriate and much needed in-service teacher training programs in the areas of BE and OCL.

Unfortunately, the teachers who do not know enough about biodiversity and outdoor education did not join the environmental project.

Most teachers think that using local outdoor environments, students not only learn about biodiversity, but also they do it through experience, and relate to the environment in a more emotional way. They realized that understanding living systems helps us all make better decisions about our world. Moreover, we think that by enhancing student learning, teacher satisfaction also increases.

The BEAGLE and Bird-Friends projects did not require any additional expenses like bus rental or accommodation costs. Classrooms are basic venues for learning, but if classroom learning is combined with outdoor projects, the learning process becomes more adventurous and enjoyable. In this way, learning is brought back to life, it becomes a relevant and life-like experience. Areas outside the classrooms, a bird-friendly schoolyard, a nearby park, or a wooded area, which were basic requirements in our BEAGLE project, may represent places to take action. These are places to experiment, take appropriate risks, apply knowledge, and use skills, and this kind of learning experience builds learners' self-confidence, and in addition, it improves problem-solving skill as well as many other life skills.

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Ten Principles of School Motivation in China

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School is a place of educating people and its motivational activities are different from other organizations, yet, they also share similarities. According to the latest findings of the motivation theory and the summation of management practice of schools at all levels in China, 10 principles which Chinese schools' motivational activities should be followed are as follows: (1) the integration between the whole personnel involved and the whole process; (2) effectiveness and fairness; (3) materiality and spirituality; (4) positivity and negativity; (5) externality and internality; (6) normalization and instructiveness; (7) individuality and integrity; (8) pertinence and diversity; (9) timeliness and moderateness; and (10) sustainability and development. The school motivation is synthesized with theory and practice, science and art should unify the universality and concreteness with the principle nature and flexible nature to promote the harmonious development of school organization and the staff and students.

Keywords: school management, motivating, principle

Introduction

The concept of "motivating" in modern management appears after the establishment of the human relations theory and the maturity of the behavior sciences. The original idea of "motivating" refers to a state of psychological stress of people under the external stimulus and can be separated into individual motivation, group motivation, and organization motivation. The act of motivating consists of three factors—need, motivation, and behavior. And the relationship among these three factors is that motivation is triggered by the need, behavior is controlled by motivation, and behavior points to the target. Therefore, motivating is a process of continuously meeting the need, motivating the motivation, performing the behavior, and realizing the target.

Following with the tendency of humanization and human culture of modern management, motivating is becoming its main function. In the process of exploring the effective motivation, the motivation theories are enriched tremendously and can be summarized as the Content Theory of Motivation, the Process Theory of Motivation, the Behavior Change Theory of Motivation, the Composite Theory of Motivation, and the Frustration Theory of Motivation, as well as the Synchronization Motivation Theory of Chinese scholar, Yu (2008), the Equity Difference Threshold Theory, the Motivator and Demotivator Continuum Pattern, the Type-C Motivation Theory of Yu (as cited in Xiong, 1996), the All-Round Motivation Theory of Xiong (1995) and the To Find a Way to Serve Others Theory of Su (2005).

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School motivation is a process of which the managers apply a certain motivation mechanism and means to exert positive influence on staff and students based on their real needs and motivating them in an organized, planned, and purposive way. The logical starting point of the process is the knowing of the needs, the essence of the process is meeting the needs, and the key to the process is motivating in accordance with the needs, making positive guidance, having an appropriate degree, and taking timely and effective steps. All of these are aimed at stimulating and mobilizing the initiative, enthusiasm, and creativity of all teachers and students to the full and realizing the harmonious development of school. According to the practical exploration of Chinese schools' management, the motivational activities of schools at all levels can be performed according to the 10 basic principles.

The Integration Between the Whole Personnel Involved and the Whole Process

The integration between the whole personnel motivation and the whole process motivation is the basic principle of school motivation. The educating culture of school determines that every teacher and student is the subject of motivating, as well as the object of motivating, which forms a community of external motivation, self-motivation, and mutual motivation. In the practice of school management, a pluralistic, crossed, and overlapping linkage and tridimensional motivation system of interacting between school leader and teacher, teacher and student, leader and leader, teacher and teacher, and student and student should be constructed. For one thing, the external motivation should be carried out step-by-step according to the subject of school leader, the object and subject of teacher, and the object of student, for another as the subject of school leader, teacher, and student, they motivate themselves separately, and lastly, school leader, teacher, and student are both as the subject and object to motivate between themselves. Meanwhile, the cohesion between the guide of external motivation and the nature of competitive cooperation, the subject of self-motivation and initiative nature, and the participation of mutual motivation and promotive nature leads a way to build the vividly and positive school culture.

The research shows that the reason why people take actions for objectives is the needs of himself/herself—an unsatisfied desire, demand, or the psychological imbalance caused by the deprivation of interests of what they have owned. A relatively complete motivation cycle (need— motivation— action—objective—satisfaction) begins with the trigger of the needs and ends with the satisfaction of the needs. Motivation is triggered by needs, the action is taken from the accumulation of motivation to a certain degree, and when the objectives are achieved, a new psychological balance appears and the act of motivating stops. In school management, the motivating of the starting point and finishing point of every working stage should be emphasized, and more emphasis should be put on in the process of working. With the comprehensive application of various motivation theories and trying for bringing various motivation methods into play, the combination of the conventional motivation measures and creative motivation strategies and the interesting and challenging of work can guide staff and students to transform the potential needs into realistic needs, forming new needs continuously and keeping the power of upward to work harder and make progress.

The Integration Between Effectiveness and Fairness

Effectiveness is the precondition of school motivation and fairness is the core criterion of school motivation, and the organic unity of these two is the basic principle of school motivation. Effectiveness indicates that the designation of school motivation system and the application of measures are point to the

practical operation and effect which in favor of enhancing staff morale, encouraging people, and heightening confidence. The formulation of motivation policy and the implementation of action are in conformity with the law and policy of nation and are beneficial to trigger and meet the needs of staff and students. For one thing, motivating teachers should be strengthened to spur their enthusiasm on educating students, enhance their working responsibility and sense of mission, and integrate the realization of personal value with the achievement of school objectives to improve teaching and the quality of education continuously; for another thing, motivating students should be emphasized to inspire their ambition to make progress, improve their learning initiative and enthusiasm, and integrate the realization of self-development with the accomplishment of educational aim to explore the new knowledge continuously and improve their learning ability.

Fairness indicates that the designation of school motivation system and the implementation of motivation policy focus on the unity of the relative value and the absolute value, and adhere to fair and sensible which in favor of building the fair and harmonious organizational environment and campus culture. The research shows that people are not only think highly of the absolute quantity of their reward, but also the relative value of social comparison, and then, they have a sense of fairness or unfairness which play an effect on motivation effect. On the one hand, the setting of indices of teachers' assessment motivation, work motivation, salary motivation, and promotion motivation should take into consideration the interests of all concerned with open and transparent and extending the same treatment to all to encourage the positive competition and cooperation; on the other hand, motivating students should also obtain the results of encouraging the advanced, spurring on those of lagging behind, and making progress together. For example, students who are excellent and making progress in study are willing to get the rewards and think that they are deserved to be rewarded. The school motivation policy should face all students, improve a scientific system of check-up and evaluation, and provide every student with suitable education according to the different series and the consistency to create the fair environment of competition of educational starting point, educational process, educational result, and educational opportunity.

The Integration Between Materiality and Spirituality

People have the material needs as well as the spiritual needs. The material needs are people's survival instinct. The material motivation embodies the satisfaction of the material needs, which is the basic factor of arousing employees' enthusiasm. The classic management theory makes a hypothesis that an employee is the completely rational economic man and pays great attention to the material motivation particularly. And the spiritual motivation represents the satisfaction of the spiritual needs, which is the basic factor of arousing employees' creativity. The behavioral science theory makes a hypothesis that an employee is a social man with spiritual pursuit and attaches importance to the spiritual motivation particularly. Different types of motivating can meet the needs of different people and people's different needs. School leaders should make a deep understanding and analysis of the type, level, and property of teachers' needs to make it clear which needs are reasonable and can be met as soon as possible, which needs are reasonable but can not be met in short while, and which needs are unreasonable and should be exhorted. The above-mentioned information should be held accurately and analyzed step by step. According to the concrete conditions and the application of different motivation measures, combining the material motivation with the spiritual motivation and giving priority to the spiritual motivation can help teacher exclude the difficulty and anxiety. And try to create a good working, study, and life condition, and a high-quality environment of self-respect, self-achievement, and self-actualization

through the explanation and exhortation.

Motivating students is different from the teachers, and attention should also be paid to unify the material motivation and spiritual motivation. To promote the all-round development of students and improve the whole quality of students, we should insist on giving the priority to spiritual motivation and taking the stimulation of the learning desire, the call of yearning for objectives, the encouragement of the desire to advance, and the improvement of cognition of self-value as the aim, base upon encouraging the subjective initiative, devote to forming the vision of studying together, keeping the cultivation of ideology and morality and sentiment in mind, bringing into full play the example, demonstration, and encouragement effect of motivating and reinforce, and creating conditions for meeting students' motivation and needs of self-improvement, self-achievement, and self-actualization. For instance, the granting of scholarship and grant-in-aid have both the material motivation and spiritual motivation, which are not only reward the excellent and stimulate the advanced, but also favor the poor students moderately. And the motivation mechanism is enriched and improved continuously in practice.

The Integration Between Positivity and Negativity

Motivating, also called positive motivation, usually refers to the positive meaning of stimulating activities from which the affirmation, recognition, compliment, appreciation, and trust of the subject to object. The main method of motivating is the positive reinforcement to encourage the behavior which is in accord with organizational goals to emerge continuously. Sometimes, the negative motivation should be limited when the positive motivation is going on. When an employee's behavior is not fit in with the organizational goals or the needs of society, the negative motivation or the negative reinforcement is necessary to punish them through the critical education, disciplinary sanction, or financial penalty. For instance, the punishment of warning, recording a demerit, reducing in rank, reducing salary, dismissing, and expelling are put into practice to weaken or eliminate the unfavorable behaviors. Modern school motivation should insist on developing rewards and punishments, as well as positive and negative reinforcement simultaneously, meet the reasonable needs to promote the positive behaviors and limit the unreasonable needs to inhibit the negative behaviors, carry forward the healthy trends, and make efforts in forming the motivation atmosphere with vigorous and dynamic.

The positive reinforcement or negative reinforcement alone has no difference between good and bad, and it is necessary to apply it in a flexible and comprehensive way according to the concrete conditions. The motivation and restriction mechanism should be perfected particularly. And it is necessary to seize the opportunity, frequency, degree, and direction of motivating, develop positive and negative reinforcement simultaneously, keep strictly the rules for reward and punishment and work in coordination to strengthen or encourage the correct behaviors with positive motivation, and stop or avoid the incorrect behaviors with negative motivation. Generally speaking, school should rely mainly on reward and make a punishment subsidiary, make use of positive motivation as much as possible, and reduce the use of negative motivation to prevent the frustration of organization members and frustrate the self-respect and initiative of teachers and students. Besides, there is a zero motivation which refers to reduce the frequency of behavior from occurring by cancelling the positive or negative motivation of certain behavior between positive motivation and negative motivation.

The Integration Between Externality and Internality

The classic management theory pays attention to the external motivation, whereas, the behavioral science

theory attaches importance to the internal motivation. Maslow's Hierarchy of Needs Theory and Herzberg's Motivation-Hygiene Theory, both contain the external and internal motivation. The internal motivation is triggered by the internal reward and originated from the motivation of work and the heart of the motivated. The internal reward is the stimulation from the task which refers to the knowledge, skill, identity, responsibility, satisfaction, honor, achievement, self-improvement, self-actualization, and even the sense of crises obtained from the working process. It is synchronized with the working progress which is helpful for employees to develop themselves and "keep a good stage passion". The external motivation, which refers to the praise, award, or satisfaction of raising wage and bonus, and promoting title obtained from finishing the task, is triggered by the external reward. It is an additional motivation and is often controlled by managers. Although, it is not synchronized with the working progress completely, it also has certain association with the working progress and is conduced to achieving the working targets. In the practice of school management, these two modes of motivation are often interwoven, though, they have an essential distinction.

The research shows that people will get more satisfaction when they concentrate on or strive for one thing at a time. The work becomes a kind of motivating and can keep the staff's motivation for a long time if the staff is engaged in a job which is in accord with their hobby, and they can realize their own value through giving full play to their professional knowledge and making an achievement. Although, the external motivation is very important and popular and indispensable in the school management, it is lacking in the advantages and functions of internal motivation. If the external reward disappears, the motivation effects will weaken or disappear and can not be lasting. School is a learning organization and a place of knowledge-intensive. According to the characteristics of the staff and students, the manager should lay emphasis on stimulating the positive motivation and activity, as well as strengthening it constantly to make it continued, and combine the internal motivation with external motivation, as well as giving priority to the external motivation adeptly to bring the motivation function of task into full play and get twice result with half effort.

The Integration Between Normalization and Instructiveness

Norm refers to the code of conduct which must be observed by every subject and object of school motivation and the policy system of guaranteeing the legality and acceptability of motivation activity (Li, 2008). Education refers to the activity process which led by the transmission of knowledge information, the education of ideology to promote the physical and mental health, and the harmonious development of the motivated. Normalization is not only the foundation of effective motivation, but also the guarantee of fairness of motivation. Instructiveness is the basic characteristic and special function of school motivation and embodied at different stages of pre-motivation, mid-motivation, and post-motivation. School is a place for educating people, and every activity in school including system itself has the instructiveness. People's needs are unlimited and have the characteristic of variety, hierarchy, and diversity, and especially, so with the education needs. In order to meet the education needs, the education motivation is devoted to creating various conditions, motivating the behavior motive, and realizing the educational goals. That means to encourage the teaching passion of teachers and urge them to focus on education, as well as the enhancement of the working quality, and to concentrate on study, as well as the improvement of academic achievement.

Norm is closely related to education, the restriction of norm is also the guideline of education, and the ways and means of education should observe the established policy norms. The scientific and rational rules and regulations are not only a set of motivation policy system of keeping strictly the rules for reward, and

punishment is a means of education motivation. Running a school according to law and managing a school according to regulations are the conventional requirements of modern school motivation, which has the characteristics of dominance and stiffness. The long-term and authority of rules and regulations can not only control the behavior of staff and students in the range of conforming to the school's regulations to form the good school spirit and style of teaching and study, but also can gradually develop the ethics which observed by staff and students in common and internalize them to the behavior and literacy of staff and students. Furthermore, the main purpose of standardized education lies in motivation but not shackles. The research shows that a person can only give play to his/her ability of 60%, the rest 40% depends on the leader's stimulation. Therefore, the standardized education should be integrated with the motivation of reward to reinforce the motivation of the standardized education.

The Integration Between Individuality and Integrity

In the process of motivating, the relationship between individual goals and organizational goals are complex and showed in varied forms. The A, B, C, and D of the following diagram indicate four different motivation effects respectively: A and B show that motivating is relatively success and the organizational goals are compatible with the individual goals; C only mobilizes the enthusiasm of realizing the individual or small-group goals and makes no difference to realize the organizational goals; and D shows that the individual goals are at odd with the organizational goals (Yan, 2008) (see Figure 1).
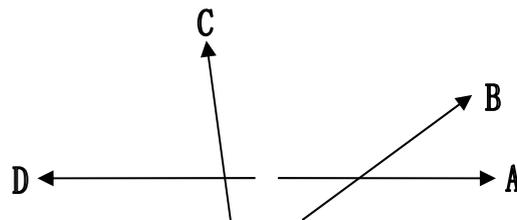

Figure 1. The diagram of reaching the individual and organizational goal of motivation.

The basic principles of Marxism point out that the individual's all-round development is a prerequisite to humankind. Likewise, in school, an individual's development is a prerequisite to the organization development. And the goals of the staff and students are the uniformity of consistency and discrepancy with the general goals of school. When there is a conflict between them, the individual goals will often hinder the realization of organizational goals. Therefore, school's motivational activities should try to find the joint point of interests and goals at all levels to achieve the fusion of individual goals and organizational goals. In other words, the organizational goals of school should not only reflect the demand of the overall development, but also take the requirement of the development of each group and individual into consideration, and not only give full play to the enthusiasm of staff and students to realize the organizational goals, but also help improve the achievement of individual goals, and then, improve the realization of the individual goals of staff and students and the general goals of school in common.

The Integration Between Pertinence and Diversity

School motivation is a systematic engineering of multi-level and multi-direction and touches upon the common endeavors and the effective communication of the motivation subject and object. The subject of the

school motivation is people, and it is the same with the object, while people have the difference of belonging an individual or a group, of which the needs are also different. Not only are the needs between the individuals and groups different, but also the needs of each person and group have a tremendous difference, and the needs have changed constantly according to the variability of an individual, the different things, the time, and the place. According to Maslow's Hierarchy of Needs Theory, the motivation will not from the satisfied needs, and as each level in the hierarchy is substantially satisfied, the next need becomes the drive of a behavior. The premise of motivating is to trigger off and meet the needs pertinently through the information of the needs and characteristics of the motivated people. In other words, proper measures should be taken to motivate effectively according to the needs and motivation of different people, different hierarchies, and different types. The diversity of motivation measures is decided by the diversity of the motivated people and their needs.

The stimulator should recognize and know the needs of the motivated people including the short- and long- term needs, the main needs and the secondary needs, and the strong needs and the weak needs, and then, make sure that what needs should be met, what degree of the needs should be met, and how to meet the needs to make greater achievements of motivating at the cost of less motivation cost from the perspective of getting the best consequences. This implied that according to the different needs of individuals or groups, the act of motivating will be different and the motivation mode should not be rigidly adhered to a single, even for the same person or group, but it should carry out the flexible motivation mechanism, employ all sorts of motivation methods or make the diversity of the motivation mode according to the characteristics of their needs. People's work and learning enthusiasm which have the peak and low ebb obviously are characterized by periodicity. When the staff and students are at the low ebb, the manager should apply the proper motivation methods to help them get rid of the low ebb as soon as possible and generate enthusiasm again to have the best effect of motivating. When the staff and students are at peak, the manager should peak tension and relaxation of moderate degree to maintain the enthusiasm and take effective measures to make the enthusiasm stronger and make the motivation effects at a high level.

The Integration Between Timeliness and Moderateness

School motivation, which has a clear and definite goal, as well as taking the appealing of different stakeholders into consideration, has a strong purposefulness and should adhere to the principles of timeliness, moderation, and application to fully strengthen the dominant role of people and tap the infinite potential. The act of motivating can be divided into the instant motivation and the delayed motivation according to the time of motivating. The timeliness and moderateness of school motivation refer to choose and seize the opportune time to motivate just right to guarantee the best effect of motivating. The research shows that the effective rate of the instant motivation is 80% and the delayed motivation is only 7%. Generally, the instant motivation makes it easier to achieve good results. When organization members have made achievements, they are eager to be approved by the organization or other members. If the moderate rewards are given to them immediately, other people's motivation will transform into the self-motivation which can encourage them to redouble efforts and make greater achievements and produce the chain and imitation effect, as well as the atmosphere of competing and advancing.

The opportunity is placed more emphasis on the educational motivation of students than the other motivation. The prompt of motivation is inversely proportional to the age of students, the younger the age of the educated is, the more prompt the motivation should be. Motivating the middle school students, the college

students, and the teachers should also be prompt and of moderate degree. For instance, teacher should praise him/her immediately when a student gives a good answer, encourage him/her immediately when a student does a good deed, and commend him/her immediately when a student who does always poorly in certain subject while makes progress in an examination (Li, 2008). The school leader should make a positive appraisal or praise to a teacher if he/she does very well and the school leader should also make an affirmation or reward to a teacher promptly if he/she makes a great achievement in the work. If we miss the best time of motivating or the act of motivating is not given promptly or beyond a certain degree, the effect of motivating will not only discounts a lot but has an impact on motivating in future. And it is true with the prompt and moderate degree of the negative motivation.

The Integration Between Sustainability and Development

The key to keep the strong vitality and development powder of school organization is the long-term effective operation of motivating to always keep the high enthusiasm of the staff and students. The stimulator should make overall coordination of the relationship between fairness and efficiency and short- and long- term to seek the new source of the stimulation continuously, take the new motivation measures, reinforce the normalization and instructiveness of motivating, and make sure of the sustainable development of motivating. The string of motivating will be stretched tightly and broken easily if the strength of motivating is intensified blindly and the act of motivating will not be continued. If the motivational goals are set virtual-high and not been put into practice, the act of motivating will make a difference in a short time, but it may not be continued for a long time. The investigation shows that the correlation of the average rewards and the working attitude is only 20%, whereas, the correlation of the differential rewards and the working attitude is up to 80% (Yan, 2008). The modern school motivation should have regulations to follow, uphold all men are equal before the system and stress importance of fairness, as well as to be flexible, have the difference and the moderate degree of motivating, and pay close attention to artistry to retain the effect of motivating for a long time.

The basic purpose of school motivation is to improve people's development. For teachers, no matter whether they belong to an individual or a group, they are all concerned about and discriminate the different needs. In order to improve the continuous growth, advancement, and development of teaching, they change the motivation methods and modes continually, satisfy the conditions they created, and motivate the internal drive force to finish the task. For students, whatever they belong to an individual or a group, they should view their progress from the development point of view and analyze the difference with the dialectical view points. They should see the educational motivation as a continual process of motion and development, put the rewards and punishments into practice effectively, have the future change and development in mind, meet the need of aggressive, and mobilize the enthusiasm of hard working to make the improvement of self-transformation and self-development. Attention should be paid specially to the two phenomena of motivating the teachers. The first one is some teachers have no higher needs in working and life and keep the psychological balance enduringly because they are "satisfied" with the status quo. The other is owing to the dissatisfaction of the status quo, some teachers take a passive attitude toward the work to make compensation and keep the psychological balance. School managers should deal with different teachers in different ways, motivate them pertinently, intensify the psychological imbalance and tension, and impel them to form the new needs, motivations, and activities to maintain the vigor and vitality of the organization.

Conclusions

School is a place of educating people, and its motivational activities and principles are different from other organizations, yet, they also share similarities. The above-mentioned principles are the general or basic principles which summarized from the practice of school motivation at all levels according to the latest findings of motivation theory. However, in reality, the management of school motivation, which has the rough regulations and restrictions but not the established rules and laws, is full of richness and vividness. School motivation is not only a science, but also an art; it is the combination of science and art. School motivation is a science refers to the principles of motivating that share universality and intercommunity. School motivation is an art refers to the modes of motivating that share particularity and discrepancy. School motivation is the combination of science and art refers to the practice of motivating should unify the universality and concreteness with the principle nature and flexible nature, give positive guidance, and motivate reasonably to promote the common development of school organization and the staff and students.

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Classroom Management in Tertiary Level: Problems and Suggested Solutions

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Teaching in the tertiary level requires instructors not only have expertise in terms of the content, but also equipped with classroom management skills. Classroom management is one of the areas that expressed by the new, inexperienced, and novice instructors where they needed help. The researcher was given the opportunity to gather the newly-hired, as well as the tertiary teachers who have been teaching for less than five years. Using the focus-group discussion, the teachers were asked to express their concerns regarding classroom management and share their experience, and what they think as hindrances to their achieving an effective instruction. This study then presents the problems which the new instructors deal with. The researcher also presents here some of the detailed solutions that suggested to address the problems based on the experience which were found to have been effective.

Keywords: management, classroom management, tertiary classroom problems, new tertiary instructor, solutions

Introduction

Young, inexperienced, and novice teachers in the tertiary level face a lot of challenges. Several studies have shown that one of the areas, which is really among the top three of the list, where new instructors need a lot of help is on classroom management. In this day and age, when the attitudes of the students have changed in terms of how they deal with persons in authorities, maintaining a good order and discipline in the classroom has become a difficult task for someone new in the field. Groves (2009) in his book *The Everything Classroom Management* defined "classroom management" as "the actions that teachers take to create an environment that supports and facilitates both academic and social-emotional learning". In other words, these are whatever the instructors do to make sure that environment is conducive to learning.

The author recently conducted a seminar-workshop on classroom management for the in-service training on the newly-hired or on-probation instructors. The training provided a venue for the new teachers to express the concerns and issues regarding the topic at hand. This paper discusses the challenges that new teachers face with regard to classroom management, and at the same time, the author provides suggestions and possible solutions or ways to address the problems through sharing her practices as well.

Discussion

Problems

Seventeen newly-hired or on-probation teachers were asked about what are the issues and challenges they

face in maintaining order and some reasons for why effective classroom management is sometimes out of reach. The following are the areas they presented.

Physical set-up. Students seem restless since some classrooms are not well-ventilated and noise as well as distractions from passers-by, and vehicles cannot be avoided. In a study conducted by Krysa (1983), it was found out that noise affects learning and retention. Fleming (2001) also emphasized that noise distraction can significantly affect students, especially those whose personality types are introvert.

Class size. Quality instruction and discussion are affected as these new teachers find it difficult to facilitate a large class discussion. They also added that especially on major or board courses, they planned an in-depth discussion with their students, but it seems a problem to reach since interaction can be limited to a few students, and some will tend to feel that they are not given the opportunity to express their ideas. In a large class, students reported that they were: (1) more easily lost attention; (2) more easily became distracted by classroom noise and student conversations; and (3) less motivated because of the impersonal nature of the class and lack of individual accountability (Wulff, Nyquist, & Abbott, 1987).

Attendance. New teachers consider attendance as a challenge to make sure that students will really attend classes. Absenteeism and lateness in classes are what they find difficult to handle. For some teachers, this may be related to class size as well. In a 2008 survey with California State University Stanislaus Faculty, teachers expressed that class size increases have resulted in less class discussion, less personal interaction, less writing, decreases in class attendance, less feedback on writing, less instructor and student interaction, and more difficulties in classroom control. Impersonal environment could have brought this situation.

Rules/Policy. The inability to maintain consistency and firmness from the teachers' end is what makes this area of classroom management quite a challenge, for the novice teachers are still trying to learn the ropes of dealing with misbehaviors. But consistency is a key to maintain order in classrooms. Many educators suggested that with every rule or classroom policy, a clear and concise explanation should be given to students. For adults, like the tertiary students, these rules and policies of which new teachers try to establish and implement should be feasible and realistic.

Praise, reinforcement, and punishment. Striking a balance between praises and punishments was also cited as a dilemma. The difficulty may be in dealing with non-compliant students. Should they be deducted or not? Should late submission of requirements be allowed or not? And, what should be done to students who have been following guidelines and deadlines all the time? These are the questions presented also by the new teachers. Truly, over-praising can become ineffective and too much punishments or deductions can lead to inappropriate use of grades as an indicator of achievement. Having to deal with these situations may be prevented to occur if the guidelines, requirements, and rewards/punishment system are established, explained, and discussed with the learners at the beginning of the semester.

Time management. So many things and topics trying to fit in an hour and a quarter instructional session, a new teacher always finds that he/she has a lot to still cover with so little time left. Administrators find that novice teachers usually forgo the closure segment of a session. Closure, synthesis, and summary of a class session helps students get a view of what were the important points covered and will also have an idea whether objectives were attained. Missing such part in the instructional process will lead to students' disengagement and learners' having difficulty in following the flow of the instruction. Planning for the instruction was also cited as a result of ineffective time management. Kelly (n.d.), on her secondary education

guide expressed that attaining higher standards will less likely to be achieved if there is insufficient planning time, and this deprives students of quality education.

Suggested Solutions

Administrators and colleagues also observed some of the following time-wasters from the inexperienced instructors. The suggested solutions to address the problem are also presented below.

Checking attendance. *The problem.* Instructors do a roll call to determine whether students are in or not. In a session, this can take around five minutes of the time. This may not be much but if the sum of all the sessions where five minutes is allotted for determining the presence and absence of every individual student, taking that there are 16 weeks of two sessions per week for every semester, this will have 160 minutes or a little more than two and a half hours, which could be allotted for more in-depth discussion of one and a half sessions. This is only talking of one subject here, what happens if each subject does this for a student's six subjects in a semester.

How can this be addressed. Assigning a class beadle who will do the attendance checking or is assigned to simply determine the absentees in the class without the usual roll call may help. This will also be facilitated when students are assigned a seat so that when a seat is not occupied, it is easy to determine that the student is absent from class.

Announcements and individual clarifications and questions. *The problem.* Reminders, announcements, and dealing with each learner's clarifications are some of the matter which teachers take a lot of instructional time. Teachers, sometimes, do this so that there is a uniformity of what should be submitted. Questions and clarifications are also entertained for every individual to illuminate some of the students' confusion over the requirements which need to be submitted.

How can this be addressed. Guidelines for a certain project are laid out to serve as "guide" in its real essence. If the guidelines are orally given, there is a great tendency that students may not have a full grasps of the details on the things to submit, and attachments to include. A Webpage can be created for students to visit in case they will need some time to really comprehend the details or a page they can visit at any time and that they do not need to see the instructor just for this purpose. Teachers can maximize the use of Facebook and Twitter for reasons. An excerpt of an announcement that the author made in Facebook is below (see Figure 1), which greatly helped save time in class and that the time intended for this in class can be used to the more important topics.

E-learning is a great venue to post announcements, additional information, and detailed instruction of a requirement. The sample is shown in Figure 2.

Setting-up of facilities. *The problem.* LCD (Liquid Crystal Display) projector does not work, laptop will not turn on, or no audio is coming out from the speakers during the video presentation. These are just some of the disasters of a supposedly well-planned instruction or classroom activity. Trying to fix the facilities and calling for help may take some of the instructional time.

How can this be addressed. The best suggestion for this is to always have a plan B or a back-up plan. Always anticipating that facility malfunction is a possibility. But to also deal with this ahead is to ask the ICT (information and communication technology) assistant to set the facility or to assign a student to check the electronic materials and gadgets ahead of class time. Some students will gladly assist the instructor in any way they can.

Figure 1. Use of social media to reach students and facilitate announcements.

Figure 2. Use of e-learning for students to be guided in the preparation of a requirement.

Assessments. *The problem.* Assessment of students' learning is an important part of instruction, for this is where the achievement of instructional objectives is determined and development of skills is evaluated. However, this can take also a significant amount from instructional time be formative, summative, or performance-based assessments.

How can this be addressed. Tertiary teachers should realize that there are several options for assessing their students' learning. An online quiz can be as effective as a face-to-face classroom quiz. E-learning quizzes are convenient for students, as teachers can assign a specific time, such as 8 a.m. to 12 a.m. for an allotted number of minutes, say 10 minutes, for a maybe 30-item quiz. Learners then can log-in at anytime from 8 a.m. to noon, but once they click to take the test, they have to complete the quiz in 10 minutes. A sample screen shot of the quiz in e-learning is shown in Figure 3.

For a multiple-choice test, the platform provides an option to reshuffle items as well as options in an item. This is to address the issue on a possible cheating incident among students while taking an online quiz.

Figure 3. Screen shot of an item from an online quiz.

Performance-based assessments more likely reveal students' understanding. This is preferred by teachers aiming for skills which may not be directly seen and evaluated via paper-pen tests. These are suited to assessing application of content-specific knowledge (Shepard, 2006). Raagas (2010) identified time as a limitation for conducting and giving performance tasks. One option to still ask students to do performance task without taking too much instructional time is to ask students to take a video of their performance, and then, they are asked to upload the video in youtube.com or burn in a CD (Compact Disc) of which the CD is submitted to the instructor. In this way, the instructor can see the students performing the task, and evaluate the level of learning without taking too much time from instruction. Teaching demonstrations among education students are an important assessment of skill which usually take a great amount of time if done in class, especially for class of at least 45 students and if each will be asked to do the demo. Below is a screen shot of a students' performance of the assigned task, specifically a teaching demonstration (see Figures 4, 5, & 6).

With the use of a checklist or a rubric, the above strategy for assessing students' learning was effective.

Figure 4. A video requirement was asked from students for them to demonstrate the skills they developed in the course (1).

Figure 5. A video requirement was asked from students for them to demonstrate the skills they developed in the course (2).

Figure 6. A video requirement was asked from students for them to demonstrate the skills they developed in the course (3).

Conclusions

There is really no one-size-fits-all rule in classroom management, but for the more common problems, such as instructional time management, several ways and options are available at hand. Students' misbehaviors can be best dealt with a prevention strategy, such as a well-planned instruction. Novice and inexperienced teachers should be helped and mentored by the veteran teachers of effective classroom management techniques.

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US Film and Patriotism Education: A Chinese View

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This review essay comments on the film *White House Down*. Based on the general and Chinese literature on youth patriotism education, this article argues that this US film encourages youth political participation by using the role model approach and new media, presents a balanced patriotism education story in which passion and critical thinking were both promoted, and finally, makes the historical building (White House) speaks for patriotism education.

Keywords: US film, youth patriotism education, China

It was one of the hottest days in Shanghai, with cicadas singing day and night on the trees, the author attended a movie, *White House Down*. Just several minutes after the film started, the author, a citizenship education teacher, found so many elements exciting and familiar: youth, new media, politics, and patriotism. The author can not wait to share what she has found in the dark cinema, where she was also busy escaping the bomb attacks on the screen.

The Youth Political Socialization Role Model: One in a Million

Let the author started from the school girl Emily in the film first, aged 11, a big fan of the president. One day, she and her father, who just finished a secret service job interview, started their tour of the White House. Unluckily or luckily, on the same day, the terrorists (known as paramilitary group later) assaulted the White House. So, after they occupied the White House, it was the little school girl, using her mobile phone to upload the crime scene video to YouTube, revealed the terrorists' information to the people outside .

Emily, in the author's eyes, undoubtedly, is a rare youth political socialization role model.

Youth political apathy and youth loosing interests in traditional politics, have become world-wide concerned issues. What if today's youth and tomorrow's citizens loose their interests in voting. People worried about the future of democracy. Academic researchers conducted surveys on youth political and civic competencies in nearly 40 countries, trying to learn from each other's successes and failures (Schulz, Ainley, Fraillon, Kerr, & Losito, 2011). Youth political socialization study, after relatively silent for several decades, come back with the collaboration of education, psychology, etc. (Barrett, 2012).

Emily, in the film, following the terms discussed in these recent studies, fell into the category of the youth growing up in areas (Washington, D.C.), families (a police father) with rich political socialization resources, and personally enthusiastic about politics (owing to her political blog). That is why the author use that description—"one in a million". Not all youths nowadays live a similar life like Emily.

So many Western scholars have noted that role model is an approach widely-used in Chinese moral

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citizenship education (Reed, 2006; Landsberger, 2001; Rosen, 1999). However, they should not be so surprised, because in ancient China, the term "education" (jiaohua), literally means teachers worked as the role model and students followed. In People's Republic of China, a series of communist role models were introduced to school students, like Lei Feng, who always serve the people. Role model is also widely-used in Chinese films, especially the patriotism education film. After the 1989 student riots in Tiananmen Square, the Chinese Communist Party initiated the patriotism education nation-wide, which not only required school education to carry out patriotism education, but also listed hundreds of historical sites and museums for school visits, created numerous patriotism education films and songs for youth entertainment (Wang, 2008). Role model was frequently used in these films, thus, making a lot of film roles famous to Chinese youth. We like theses film roles, for they are brave, smart, and so on. But, educators in China already realized that role model approach is a two-side sword (Zhao, 2008). It may distant audience. They may feel that these roles in the film are heroes, they appreciate these heroes, but they are not able to be so great.

New Media and Youth Political Participation

Mobile phone, is an important prop in that film. Emily and her cute cellphone uploaded the stories happening in the occupied White House. Meanwhile, her father, by using a satellite phone, contacted the people outside and rescued the president.

The author is sure that mobile phone is a headache for most school teachers today. Some research grants provided funds to encourage finding better usages of mobile phone in classrooms. Luckily, Chinese teachers have the "moshou" power, if anything that students wear or brought to the classroom, which teachers viewed as inappropriate for leading to higher grades in examinations, then, they have the absolute power to take them (mobile phone for instance) from their students. Though, Chinese society gradually changed their long tradition of respecting teachers without question, till now, it seems that still too few challenged teachers' "moshou" power (Xie, 2008).

Let us continue the youth political apathy issue discussed above. A lot of studies realized that perhaps students were not loosing interests in politics, instead they were just bored with the traditional voting form (Bennett, 2008). Therefore, vote on Internet may attract them!

The author saw the film agreed with these academic opinions and encouraged the youth to express their interests of politics in ways they preferred. Even, that film used one scene to inspire youth's passion for politics. At the beginning of the film, while Emily and her father was visiting the White House, the President showed up. Emily interviewed the president for her political blog. All of us heard Emily's long question, but what mattered most were neither the question nor the president's answer. My eyes clearly saw the film makers' attempt, the important thing was the girl's interest in political issues, and she had the chance to ask the president. Moreover, the handsome president was even nervous about his hairstyle in the video!

What a story! Not all students have these opportunities. However, this strategy was widely-used in school citizenship and political education. We always encourage students to send a letter to the city mayor, member of parliment, etc., to express their opinions about certain issues, trying to make them care about the society, and to be responsible citizens. But, just time flies, it flies from the pencil-paper era to the new media era.

The Patriots

From several roles' mouths, the author heard the term "patriotism", which surprised the author. For example, one asked "What made you so energetic?", a lady named Carol answered "coffee and patriotism". Telling people to be patriots directly is no longer popular in China. Instead, we are interested to achieve these goals in subtle.

In the author's observation, this film tells a wonderful story of patriotism education. Because in patriotism education, there are two aspects difficult to balance, which that film made it. First, cultivation of positive national feeling and affection. How much passion we should/could promote in patriotism education? People always disagree on most issues, let alone that education is not neutral. Take Hong Kong's promotion of Moral and National Education in 2012 for example, which received public protest for one of its pedagogies was passion-based (Tsang, 2011). Some criticized that what if students were taught to be passionated patriots, rather than to be rational thinkers? Yes, this public criticism revealed that another important aspect in patriotism education is critical thinking. That film showed an excellent balance of both aspects by presenting the story of Martin, the retiring head of the presidential detail, the organizer of the terrorist attack. To our surprise, Martin claimed that his attack to the White House was an attempt to defend national honor. Undoubtedly, according to Macedo (2011), Martin was abusing the concept of patriotism, making it a dangerous virtue. In contrast to Martin's understandings of unjust patriotism, people like Emily, Emily's father, the president, Carol, etc., showed their understandings of just patriotism. In the fighting process, all of these people showed deep affection toward their nation, without making us uncomfortable, telling us the extent of passion to one's nation: deep and natural love.

Return to the Film Stage: White House

In China, a lot of historical sites became patriotism education bases.

In other parts of the world, we also witnessed the trend of making use of historical buildings, to show youth history, the reality and future, and to shape their positive feelings toward the nation. Students, tall and short, white and black, come and go, visited the parliaments, White House, to explore the political system of their nation.

White House was the stage of that film. Meanwhile, it was the spirit of the film. However, the questions is: How to make the buildings speak for patriotism? Different from classroom teaching or school visits, where we can design interactions with students, to catch their attention, to arouse their interests. Films, more or less, only presenting single-direction pictures and voices to children. Just like my recent work: writing patriotism education books for Chinese kids. What if the students fall asleep when we, the director, the author just devoted to telling our story, without making them a part of the story?

Therefore, there is a humor White House tour guide in the film. At the time when he introducing how many houses, how many doors, and how many rest rooms in the White House, he did the same thing as school teachers did, raising questions and asking people why they were here? There were visitors like Emily knew everything about White House. There were visitors interested to know the underground tunnel that Marilyn Monroe used in White House. Very soon, visitors in White House became hostages. The introduction of White House and its spirit carries on. This time, it is not the guide speaking. When the terrorists treated the White House decorations and facilities (like Ming vase) rudely, the White House tour guide, who was not strong,

stood out to warn them. Therefore, the stage and the spirit of the film, the White House, was clearly presented to all audience, no matter how much previous knowledge they held.

Conclusions

To sum up, this is an engaging patriotism education film. It encourages youth political participation by using the role model approach and new media, presents a balanced patriotism education story in which passion and critical thinking were both promoted, and finally, makes the historical building (White House) speaks for patriotism education. However, as a Chinese citizenship education researcher, the author provides comments and reflections mainly based on her experience of Chinese patriotism education, the author is still eager to know more about what do people (citizenship education teacher and researcher in different countries) elsewhere view its patriotism elements.

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