Using Transformative Learning Theory to Explore the Mechanisms of Citizen Participation for Environmental Education on the Removal of Invasive Species: The Case of Green Island, Taiwan

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ABSTRACT
The purpose of this study is to investigate the process of participation in the transformative learning process for invasive species by community volunteers and voluntourists. The results show that children play an important role in motivating adults to accept new ideas, and for both community volunteers and voluntourists, "dialogue" has an important influence on the relationship between self-reflection and new roles. In addition, during the operation of volunteer tourism, the platform provided by local intermediary organizations functioned to link stakeholders in volunteer tourism and promote transformative learning.
Keywords: volunteer tourism, experience, dialogue, adult education, sustainable development

INTRODUCTION

The threat of invasive species has become an important global issue in the protection of biodiversity (Bonanno, 2016). Past research has shown that invasive species are the second biggest cause of species extinction, behind habitat destruction (Sharma & Raghubanshi, 2011). In particular, the threat of invasive species to the environment of small islands is worse than that of large land masses (Glen et al., 2013) because small islands have a low biological resistance to invasive species. Therefore, invasive species can easily establish themselves and start to spread, seriously affecting the island's ecology (Yiming, Zhengjun, & Duncan, 2006). It was discovered for the first time in 2008 that the common sun skink (*Eutropis multifasciata*) had invaded Taiwan's Green Island. The common sun skink may affect the survival of the native species of lizard (Lin, 2008), making its removal necessary. Work to remove the invasive species began in 2009 (Chao & Lin, 2017).

To alleviate the environmental pressures created by the invasive species, education is considered the main tool (Eilks, 2015; Sá-Oliveira, Araújo, Filho, dos Santos, & Ferrari, 2016).

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State of the literature

- Self-reflection, dialogue, and intercultural experience are the three components of transformative learning. Reflection and dialogue are derived from transformative experiences.
- Volunteer tourism experiences can be matched to the components of the 10 stages of transformative learning.

Contribution of this paper to the literature

- The influence of children is a key factor in achieving a breakthrough in the acceptance of transformative experiences by community residents.
- "Dialogue" has an important influence on strengthening participants' reflection and self-confidence.
- Community volunteers, voluntourists, and local intermediary organizations can closely integrate a system for environmental education to promote the sustainable development of the environment.

However, as Lüko and Kollarics (2013) pointed out, education on sustainable development in the past was mostly limited to schoolchildren; however, to achieve sustainable development in the community, it is believed that the environmental attitudes and environmental education of adults must also be addressed, so that adults can alter their outlook and actions. Therefore, when implementing removal work of invasive species that delivers actual benefits, the environmental education of adults, particularly that of local residents, is essential.

Changes that inspire adults' environmental attitudes and strengthen their environmental knowledge typically occur through learning. Since adult learning focuses on elaboration and creating meaning (Uyanık, 2016), Mezirow's (1975; 1978; 1991; 1996; 2003) series of studies on "transformative learning" can be used to explain and operationalize the adult learning of environmental knowledge and the transformation process. Therefore, applying the concept of transformative learning and offering practical assistance to change Green Island residents' views on the invasive common sun skink and to encourage their joint participation in the removal work shows the practical role of environmental education in reducing the impact of the invasive species on the environment. However, in contrast to patterns of formal learning, the environmental education of community residents is typically based on non-formal learning and includes the production of actual life experiences within communities (Gruenewald, 2003) and the influence of children's environmental education on adults (Damerell, Howe, & Milner-Gulland, 2013). More importantly, in the initial stages, the promotion of community work frequently encounters wait-and-see or indifferent attitudes from residents (Frey & Berkes, 2014). Community environmental education faces similar dilemmas. How to overcome this resistance and lead residents to participate in learning is an important challenge for community environmental education.

The removal of invasive species is typically related to government funding and manpower investment (Dolan, Harris, & Adler, 2015; Simberloff et al., 2013), and the removal of invasive species requires long-term work. Dolan, Harris, and Adler (2015) suggested that

using citizen action for joint efforts to resolve the ecological impact of invasive species may be a practical approach. From the perspective of citizen science, categories of civic participation include citizens, volunteers, and amateurs (Edwards, 2014). However, aside from the forms of civic participation identified by Edwards, recent research has identified the value of volunteer tourism in citizen science (Coghlan & Gooch, 2011; Rattan, Eagles, & Mair, 2012). Green Island, a remote island off the southeast of Taiwan, has few residents and therefore has few community volunteers who can work on the removal of invasive species. The insufficient human resources may affect the ability to remove alien species (Chao & Lin, 2017). However, owing to its natural beauty, the island has become an important tourist attraction in Taiwan. As Green Island moves towards the development of ecotourism, using volunteer tourism to assist with the removal of invasive species is a feasible approach. In recent years, tourism has gradually gained recognition as a learning path (Coghlan & Gooch, 2011; Falk, Ballantyne, Packer, & Benckendorff, 2012; Knollenberg, McGehee, Boley, & Clemmons, 2014; Wearing & McGehee, 2013). Therefore, based on the concept of transformative learning, this study investigates how involvement in volunteer tourism can change participants' attitudes and actions toward removing invasive species and, with the involvement of community volunteers, produce a model of citizen action that integrates human resources from inside and outside the community for joint participation in the removal of invasive species.

Transformative learning theory

Transformative learning theory, which was first proposed by Mezirow in 1975, emphasizes that major life events influence how individuals interpret their experiences and view things. When people view things from different perspectives, their interpretations of life also change. This is the central concept of transformative learning. Mezirow (1991) believed that problem-solving situations produce learning behavior. However, the problem-solving process is influenced by individual meaning perspectives. When individuals reflect on the assumptions or expectations behind their life events, if they discover that these assumptions were mistaken or too narrow, they will revise and adjust their meaning perspectives (Mezirow, 1991). Perspective transformation differs from ordinary learning of knowledge, as perspective transformation must produce new meaning perspectives. The key mechanism for transforming meaning perspectives is reflection. The effect of transformative learning is not only in the transformation of an individual's perspectives, but also includes changes in external behavior (Cranton, 1994; Mezirow & Taylor, 2009; Taylor, 2008). Mezirow (1991) divided reflection into three types: content reflection, process reflection, and premise reflection. Of these, content reflection and process reflection usually change our feelings, leading to a change in our meaning scheme. However, only the occurrence of premise reflection will lead to a transformation in individual meaning perspectives (Mezirow, 1998).

Although some studies have claimed that transformative learning exists only in the realm of theory, and that it is difficult to explain many everyday practices using transformative learning (Dirkx, 2012; Newman, 2012), the ten phases of transformative learning proposed by Mezirow (1978) are conducive to the analysis of actual cases. However, Taylor's (1997; 2000)

review of related literature found that the transformative learning process does not completely follow the phases of Mezirow's theory (Mezirow, 1978; 1991) in that order, as phases tend to be repeated or follow a circuitous path, and not all of the phases might be covered. In addition, Mezirow's theory (Mezirow, 1978; 1991) initially overlooked individual as well as social and cultural learning situation factors (Baumgartner, 2001; Dirkx, 2006; Taylor, 1994; 2000; 2007). This view was subsequently accepted by Mezirow (2000), who pointed out that learning must be understood in terms of our internalization of our social and cultural context.

Recently, Taylor and Cranton (2013) discussed the theoretical development of transformative learning on five dimensions. These discussions highlighted some of the questions that were ignored in previous research on transformative learning, including how new transformative learning experiences can be fostered, how learners can generate empathy in their transformative learning experiences, why some people modify their views but others do not, and whether transformative learning can be negative, and if so, how should resultant ethnical issues arising during the learning process be dealt with. These issues need to be considered in the future practical application of transformative learning theory.

The Application of Transformative Learning Theory in Environmental Education and Tourism Research

In recent years, a growing number of studies have applied transformative learning theory to explain phenomena in environmental education and travel behavior. As transformative learning emphasizes the process and self-reflection of experiences, it helps participants develop new roles and relationships, thus generating self-confidence and sufficiency, and consciously adopting new actions (Uyanık, 2016). Therefore, the use of transformative learning theory in environmental education is considered more effective than the traditional lecturing method (Çimen & Yılmaz, 2014; Feinstein, 2004). Collins et al. (2008) also found that activities based on transformative learning theory had a positive effect on the development of environmental protection behaviors among local residents in Africa. However, since transformative learning has actual benefits for environmental education, how should communities carry out transformative learning? Wilner et al. (2012) provided a useful approach to the aforementioned question by examining the issue from a resource management perspective. They argued that the critical reflection in transformative learning can strengthen participatory research and that transformative learning must be carried out on an integrated management institution platform (Wilner et al., 2012). In their study, Wilner et al. (2012) addressed previous deficiencies in the process of promoting transformative learning. Previous studies on transformative learning typically used teachers or students as their subjects on a platform provided by schools or related educational organizations. However, when communities carry out transformative learning, the organizations and people involved are significantly more complex; schools are merely one of many community organizations and may not be suitable as a platform for community transformative learning. It is therefore more appropriate to select an organization that can initiate resource management for this task.

Although travel is frequently an important conduit for the introduction of alien species (Anderson, Rocliffe, Haddaway, & Dunn, 2015; Koutika, Rainey, & Dassonville, 2011), with suitable education and guidance for visitors, or through volunteer tourism, the travel behavior of visitors can effectively control the spread of invasive species (Anderson et al., 2015; Hall, 2015). In fact, tourism is an excellent channel for lifelong learning (Broomhall, Pitman, Majocha, & Mcewan, 2010). A large number of studies have shown that learning is an important motivator for tourism (e.g., Falk et al., 2012; Knollenberg et al., 2014; Wearing & McGehee, 2013). The three main components of transformative learning—self-reflection, engaging in dialogue with others, and intercultural experiences (Taylor, 2008)—occur during the process of tourism, meaning that the use of transformative learning theory to explain and operationalize the relationship between tourism and learning is appropriate. McGehee and Santos (2005) believed that volunteer tourism may be a consciousness-raising experience for participants, which can lead to changes in their views on society. Additionally, Knollenberg et al. (2014) believed that voluntourists use the transformative learning process to seek changes in their views. With regard to the transformative learning process, Coghlan and Gooch (2011) compared the learning and change process in volunteer tourism with Mezirow's (1978) ten phases of transformative learning and found that this process can embody the concept of transformative learning. This finding indicates that using transformative learning theory to analyze the learning process while participating in the removal of invasive species in Green Island may be a viable approach. However, the core concept of transformative learning is in "experience." Reflection is only initiated through appropriate experiences. When compared with ordinary learning processes, tourism usually involves recreational features, although Packer and Ballantyne's (2004) research shows that, during the process of leisure activity, recreation and education are not mutually exclusive or contradictory for ordinary people. However, learning tourism requires a complementary relationship between education and recreation creating a synergistic effect (Falk et al., 2012). Therefore, the use of transformative learning theory in volunteer tourism activity design and planning is essential for initiating valuable experiences.

Purpose of the Study

Transformative learning theory has developed over more than three decades, and although theoretically there is still space for discussion (Taylor & Cranton, 2013), the theory is now applied to many learning fields related to adult education (Uyanık, 2016). However, its application in community environmental education and volunteer tourism is still in the initial phases, and no integrated studies have examined transformative learning among community volunteers and voluntourists. Owing to the need to remove the invasive common sun skink from Green Island, Taiwan, the joint participation of community volunteers and voluntourists provides the best materials for assessing the application of transformative learning theory in community environmental education and volunteer tourism. Therefore, the objective of this study is to apply transformative learning theory as a basis on which to analyze the learning process for community volunteers and voluntourists during participation in the removal of

invasive species. This study also explores how local organizations integrate relevant resources for developing a mode of environmental education involving collaboration between community volunteers and voluntourists, thus making a specific contribution to research on community environmental education.

METHODS

Experience is the central concept of transformative learning. However, the obtaining and formation of experiences is complex and diverse, and may involve conscious and unconscious processes and personal issues (Taylor & Cranton, 2013). Therefore, if we do not effectively understand the experiences involved in transformative learning, further analysis of the self-reflection involved in transformative learning will be difficult. Taylor and Cranton (2013) argued that past research into transformative learning relied heavily on retrospective interviews with participants, which caused a stagnation and limited progress in understanding transformative learning theory. To solve this problem, the present study uses participant observation to collect data. As Kitchin and Tate (2013) remind us, if you want to know what being an environmental activist involves, rather than just ask them, the best way is to become an environmental activist yourself. The participant observation method involves taking the position of a participant and can thus overcome the methodological criticisms of transformative learning put forward by Taylor and Cranton (2013). In addition, an important part of the process of participant observation is continued participation; therefore, for the purpose of this study, the range of data on the transformative learning process covers several years, from 2009, when removal of the invasive common sun skink from Green Island began, until 2016.The present study uses the process of participation in each project to observe and analyze the change process for community volunteers and ecotourist sat Green Island. We use methods such as in-depth interviews, focus groups, and meeting information for data analysis to produce an environmental education model for community volunteers' and voluntourists' transformative learning.

RESULTS AND DISCUSSION

According to Mezirow (1978; 1991), adult transformative learning can be divided into ten phases. Based on this concept, **Table 1** organizes the process of transformative learning among community volunteers and voluntourists. This process largely follows Mezirow's (1978; 1991) approach; however, the transformative learning process and environmental education values show variation between community volunteers and voluntourists. Below, we analyze the effect of transformative learning on the environmental education values of these community volunteers and voluntourists participating in the removal of invasive species from Green Island.

Table 1. Comparison of Community Volunteers and Voluntourists regarding Mezirow's (1978) Ten Phases of Transformative Learning

Phase	Transformative learning	Community volunteers	Voluntourists
1	A disorienting dilemma	Discover ecological diversity by finding out about the common sun skink	Experience a different environment, and find out about the problem of the invasive common sun skink through explanations.
2	A self-examination with feelings of guilt or shame	During initial participation in the removal process of the common sun skink, discover the that number of white-spots Chinese skink, a subspecies endemic to Green Island, has declined significantly, thereby feeling changes in the living environment.	Reflect that participation in the removal of the common sun skink is a special experience that benefits society.
3	A critical assessment of epistemic, sociocultural, or psychic assumptions	Realize the influence of the common sun skink in the declining numbers of white-spots Chinese skink.	Realize that tourists are also responsible for contributing to maintaining the tourism environment.
4	Recognition that one's discontent and the process of transformation are shared and that others have negotiated a similar change	Two methods: 1. Share views on the common sun skink through informal chats with community residents. 2. Share views on common sun skink with tourists.	Two methods: 1. Use period of visit for conversations and exchanges with community residents on experiences of species removal. 2. After the end of the visit, share experiences on participation in removal of common sun skink with other friends.
5	Exploration of options for new roles, relationships, and actions	Participate further in the removal of the common sun skink, follow the progress of the removal work, and try to lead the joint participation of tourists in the removal work.	Invite other friends to return to Green Island to participate in the removal of the common sun skink or participate in other conservation volunteer work.
6	Planning of a course of action	Participate regularly in common sun skink removal work and establish activity processes and modes for volunteer participation in removal work.	Take volunteer tourism related to ecological conservation as form of tourism activity.
7	Acquisition of knowledge and skills for implementing one's plans	Learn new and common sun skink removal techniques to improve the effectiveness of removal and enhance the concept of ecological conservation.	Enrich ecological knowledge to enhance the volunteer tourism experience.
8	Provisional trying of new roles	Try to take on the role of guardian for local ecological conservation.	Make ecological conservation an everyday habit.
9	Building of competence and self-confidence in new roles and relationships	Acquire ecological knowledge and ideas through continued participation in removal work and use dialogue with community residents and interaction and feedback with tourists to establish self-confidence as guardian for local ecological conservation.	Return Green Island to participate in the removal of the common sun skink or participate in other conservation volunteer work, create exchanges and dialogues with others, strengthen concepts of ecological conservation and self-confidence in role.
10	A reintegration into one's life on the basis of conditions dictated by one's perspective	Integrate the concept of ecological conservation into everyday life and extend this concept to other conservation issues in Green Island.	Integrate the concept of ecological conservation into everyday life, forming life and travel habits.

Transformative Learning for Community Volunteers

As Taylor and Cranton (2013) argued, experience is central to transformative learning and adult education; it is the main medium for transformation, which can be interpreted to mean that experience acts as the basis for revising the nature of learning. Direct experience with environmental issues increases environmental awareness and concern, and has a significant influence on individuals' beliefs and attitudes (Harvey, Perez, & Mazzotti, 2016). However, experiences come from two types of source: direct experiences and experiences derived from cultural and social legacies (MacKeracher, 2012). For transformative learning, these two types of source may be found in an individual's consciousness and at the subconscious psychological level at the same time. However, in terms of stimulating the initial phases of transformative learning, it is important to know how to generate motivation among participants to acquire direct individual experiences.

Frey and Berkes (2014) pointed out that, when a new perspective is inserted into the community, most residents view it with indifference and do not get involved. When the common sun skink was found in Green Island and preparations were made for its removal, the majority of residents did not understand the problem with the invasive common sun skink and adopted a wait-and-see attitude. Since the appearance of the common sun skink is somewhat similar to the white-spots Chinese skink (*Plestiodon chinensis leucostictus*), which is indigenous to Green Island, the removal work was criticized and attacked in the mistaken belief that it was capturing indigenous skink. To overcome the difficulties of community participation, the local non-profit organizations responsible for carrying out the removal work started by providing environmental education to children, which involved carrying out environmental education activities about the invasive common sun skink in local elementary schools, actual field observations, and simple activities to experience the removal process. The results of elementary school environmental education were used to demonstrate activity opportunities to the children's parents and other local residents; the children explained the ecological problems surrounding the common sun skink, thus allowing some local residents an initial opportunity to come into contact with the common sun skink. Research by Damerell et al. (2013) shows that it is easier for students to understand environmental knowledge if they are used to sharing their environmental knowledge with their parents, and it will therefore be easier for parents to become aware of the current environmental situation in Green Island through the children's environmental education on the invasive species. We aim to provide further proof that the transfer of environmental education between generations will indirectly influence parents' willingness to accept the issue of invasive species and make behavioral changes.

Although the process of children's education on invasive species can affect adults' willingness to engage in the issue of the invasive common sun skink, the similar appearance of the common sun skink and the indigenous white-spots Chinese skink remains an issue that needs to be addressed in the initial stages of removing the invasive species. Randler (2008) believed that identifying animals and plants is a valuable task for understanding the

environment and considered biodiversity an uncertain and complex structure. This complex and abstract structure typically needs to be transformed into small entities for purposes of learning and understanding. Randler (2008) also pointed out that, aside from its use with school students, this process is also applicable to ordinary citizens. Notably, the number of species to be identified in the learning process should not be excessive since too many can be confusing, and thus reduce the effectiveness of learning (Randler, 2008); the most appropriate number is between six and eight species (Randler & Bogner, 2006). In Green Island, five types of lizard share the same habitat as the common sun skink (Chao, Lin, Lin, & Pei, 2009). Therefore, during community environmental education, it is easy to apply learning about identification of the different species to understand the influence of the common sun skink on the ecology of Green Island.

Dialogue is important to facilitate the process of reflection in transformative learning (Mezirow, 1991). According to Cranton (1994), dialogue is not only an exploration phase but also an open-ended activity that generates insight and confidence. Taylor and Cranton (2013) viewed this problem from another perspective, highlighting the influence of personal and historical background on transformative experiences. They borrowed Nohl's (2009) concept of "social recognition," arguing that any experience can only become a transformative experience when it is recognized by others (Taylor and Cranton, 2013). This phenomenon is particularly evident in our case study. Green Island is a remote island located to the southeast of Taiwan, with an area of around 17 km² and a resident population of around 3,000. The ancestors of the present residents moved to the island 200 years ago and have formed strong social networks. When carrying out transformative learning on the ecological concept of invasive species, thinking must take place within the specific sociocultural and historical context. In other words, aside from acquiring scientific knowledge, residents must also obtain social recognition from the community. In Green Island, residents usually communicate and share ideas in informal settings, such as when the opportunity arises during informal conversations. By continuously inviting residents to jointly participate in the removal of the invasive common sun skink, expanding the direct learning experiences of residents, and holding continuous and frequent "dialogue" with residents, it will be possible to develop individual and community level social recognition of the problem of the invasive species and strengthen the social legitimacy of local residents' volunteer activities in the removal of the invasive species.

The removal of the invasive species typically requires significant manpower and time investments (Simberloff et al., 2013). Even though some Green Island residents have volunteered to participate in removing the invasive species through the process of transformative learning, the peak seasons for common sun skink activity are summer and fall, which coincide with the main periods that residents are involved in tourism activities; therefore, relying solely on community volunteers to remove the invasive common sun skink has limited effectiveness (Chao & Lin, 2017). It is therefore necessary to recruit additional manpower assistance. In addition, as the development of ecotourism is a goal for Green Island, the question of how to ensure residents gain economic benefits from ecotourism and continue

ecological conservation is a pressing issue (Chao, 2014a; Dorin-Paul, 2013). In view of this, non-profit organizations promoting the removal of the invasive common sun skink from Green Island have introduced volunteer tourism resources, and community volunteers help by providing interpretation services, thus allowing them to achieve economic benefits. Aside from resolving manpower demands for the removal of invasive species, this method allows exchanges and interactions between community volunteers and voluntourists, thus increasing their confidence and sustaining their participation in the removal of the invasive species.

Transformative Learning for Voluntourists

Coghlan and Gooch (2011) compared the process of learning in volunteer tourism to the ten phases proposed by Mezirow (1978). The results show that, although the transformative learning process is largely consistent with the transformative learning phases proposed by Mezirow, phase 6 (planning of a course of action) and phase 9 (building competence and self-confidence in new roles and relationships) of transformative learning have limited opportunities in volunteer tourism (Coghlan & Gooch, 2011). One of the reasons for this result is that transformative learning in their study is directed toward groups rather than individuals (Knollenberg et al., 2014); it is therefore difficult to produce individual transformative learning outcomes. At the same time, from an environmental education perspective, activities increase the environmental awareness of voluntourists, which helps to solve environmental issues (Milton, Cleveland, & Bennett-Gates, 1995). Therefore, as with participation in volunteer tourism activities for the removal of invasive species, the activity itself simply develops the participant's environmental awareness. In short-term volunteer tourism activities, it is difficult to develop new role relationships via activity reflection or develop follow up action plans. However, lengthening the period of involvement in the activities and following up with the psychological changes among voluntourists, the above problems could be overcome.

Although voluntourists have many different motivations in addition to the pursuit of personal growth, the main motivation is the pursuit of altruistic experiences that are distinct from mass tourism (Wearing & McGehee, 2013). Past research has also shown that in wildlife-related volunteer activities, the participants gained knowledge and experiences from contact with the wild animals, demonstrating that these activities can increase their environmental protection awareness (Orams, 1997) and showing that a desire for contact with animals is an important motivation for this type of volunteer tourism. Following the participation of voluntourists in the removal of invasive species, data from interviews with the voluntourists and from their social media interactions indicate that voluntourists' initial motivation is related to the expectations of coming into contact with animals. Since the removal of the invasive common sun skink from Green Island uses the perimeter trapping method (Chao & Lin, 2017), which is a type of physical trapping used for lizards, voluntourists also come into contact with lizards, snakes, amphibians, crabs, and land snails. When voluntourists assist with the removal process for invasive species, aside from explaining the ecological problems associated with the common sun skink, community volunteers also provide explanations about the other animals of Green Island that are captured. This process helps voluntourists

understand the overall state of the environment through their knowledge of the ecology of these animals. During dialogue exchanges between voluntourists and community volunteers (phase 4), it was also discovered that voluntourists can also form a concept of biodiversity through their participation experiences. This shows that, from the perspective of voluntourists, participating in activities to remove invasive species is an "event" in the formation of environmental awareness; its value is found in the formation of an overall concept of environmental protection.

McIntosh and Zahra (2007) stressed that during volunteer tourism, dialogue between hosts and guests is an important part of the operations and can promote the interests of both sides. The results of the present study also confirm this. For community volunteers, feedback from voluntourists can strengthen the value and self-confidence in their participation in removing invasive species. Voluntourists can reflect on the relationship between their role and the environment through new experiences. In addition, Knollenberg et al. (2014) pointed out that participating in informal dialogue, possibly at meal times or at the activity site, also produces excellent results. This study also found that in such informal settings, the two sides interact more closely and faithfully to express their views. This is one of the reasons that the present study uses participant observation to collect data.

Follow up observations of voluntourists found that they shared their experiences of invasive species removal in everyday conversations with their friends and on social media (phase 4). This process helps the voluntourists to increase their self-confidence in terms of the relationship between their new roles and the environment following reflection. According to Akçay (2012), transformative learning can allow individuals to try new ways of thinking to avoid their self-growth stagnating. The actual performance of these voluntourists in subsequent learning growth includes active participation in other environmental protection activities and gradually including environmental protection habits in their daily lives.

Civic Participation in the Operational Framework of Transformative Learning for Environmental Education Role of Intermediary Organizations

Past research has shown that the main stakeholders involved in volunteer tourism include members of the host community, the volunteers, and the volunteer tourism organization (Barbieri, Santos, & Katsube, 2012; Lepp, 2009; McGehee & Andereck, 2009). Knollenberg et al. (2014) referred to volunteer tourism organizations as intermediaries, focus on volunteer tourism bodies (including for-profit organizations and non-profit organizations), their role in commercializing volunteer tourism, and the possible negative effects that may arise from their involvement. Wilner et al. (2012) also pointed out the problem with volunteer tourism viewed organizations from the perspective of the effectiveness of resource management, arguing that transformative learning must take place in an integrated management platform to effectively promote social learning. Although these two studies examined volunteer tourism organizations from different perspectives, they both appear to
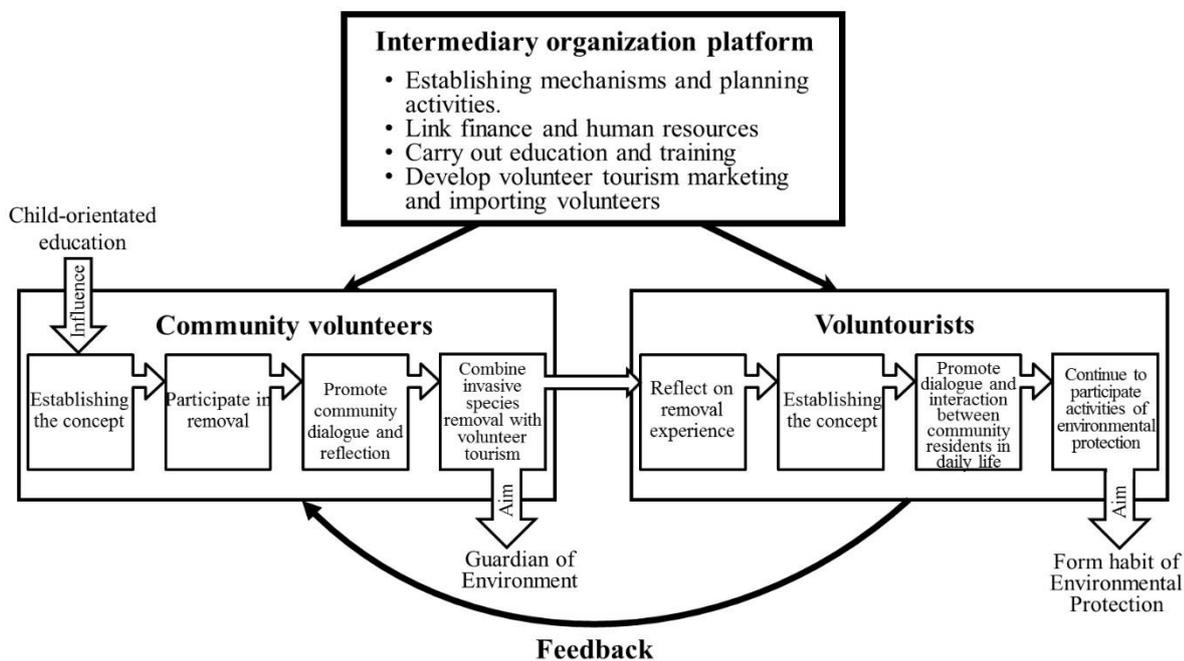
Figure 1. Civic participation in the operational framework of transformative learning for environmental education

ignore the question of how to join the three main stakeholders in volunteer tourism to generate joint benefits.

In this regard, Chao (2014b) suggested that local intermediary organizations might be able to forge a link between these three stakeholders. Chao (2014b) focused on the implementation of environmental conservation; in other words, how to ensure that local residents (or community volunteers) can continue to carry out environmental protection work. He advised that the role of local intermediary organizations is to act as a communication platform between internal resources and external resources, provide a communication channel for information between producers and providers and between requesters and suppliers, and provide the necessary long term support and assistance to local environmental protection organizations (Chao, 2014b).

Borrowing from Chao (2014b), **Figure 1** shows the linkages between the three types of stakeholders for activities removing invasive species in Green Island. Community volunteers are the driving force and foundation of the removal work; thus, transforming their views helps with the ongoing sustainability of invasive species removal work. From an environmental education perspective, the ultimate goal of community volunteers is to become guardians of the local environment. Community volunteers can use volunteer tourism activities to share their experiences and thoughts regarding the removal work, and voluntourists can participate in removal activities to reflect on their relationship with the environment, which is finally

translated into the ultimate goal of taking practical action to form environmental protection habits. At the same time, local intermediary organizations act as a bridge between the community volunteers and voluntourists, implementing resource integration, education and training, activity design, and marketing activities, so that the three types of stakeholders can acquire participation values from the resource maintenance process and ensure continued environmental sustainability.

CONCLUSION

Resolving rapidly worsening environmental problems is an issue that people in the modern world must face jointly. The application of scientific knowledge in taking practical action is the key to science education in the twenty-first century (Coll, Lay, & Taylor, 2008; Kuo & Perng, 2016; McFarlane, 2013). However, before taking practical action, the correct views must be established (Özdemir & Clark, 2007; Zhou, 2010); therefore, adults who are no longer enrolled in school must continuously revise their views based on the progress of science and create a new relationship with society and the environment. During the adult learning process, transformative learning provides an excellent theoretical basis, which allows the learner's thoughts, emotions, and actions to be formed unconsciously through their experiences (Hodge, 2014), and thus leads to actual participation actions.

The present study, based on transformative learning theory, analyzes the changes in the learning process for community volunteers and voluntourists during the process of the removing the invasive common sun skink species. Experience is central to transformative learning; however, in the initial period, it is difficult to motivate community participation (Frey & Berkes, 2014). The results of the present study use the outcomes of environmental education for children to show the effect of their activities on parents and community residents' willingness to participate in the invasive species removal. In addition, everyday dialogues and exchanges between community residents play an important role in the transformative learning process. This process is primarily the formation of new ideas through participation experiences, which achieves social recognition through community interaction and increases participants' self-confidence in establishing a self-concept. This process also allows participants involved in the removal of invasive species to obtain legitimacy through collective community concepts, ultimately making community participants into the guardians of the local environment.

Voluntourists participate in the removal of the invasive species through the tourism process. Although voluntourists only participate in the process for a short period, their contribution acts as an infusion of transformative experiences for the individual. Through reflection, these participants establish a new relationship between their roles and the environment, with dialogue taking on particular importance. Dialogue among community volunteers acts as a feedback mechanism that increases the self-confidence and environmental commitment of the community volunteers. Through sharing and dialogue in an individual's

everyday life, volunteers can reflect on the new concepts formed by transformative experiences and form everyday environmental protection habits as the ultimate goal.

Local organizations play a bridging and supporting role between community volunteers and voluntourists. These organizations serve as a platform providing resource integration, education and training, activity design, and marketing activities, thus allowing the three types of volunteer tourism stakeholders to be closely integrated and ensuring that the maximum environmental benefits are maintained.

Longitudinal data analysis is a method of empirical research that is still lacking in the field of transformative learning. The present study uses participant observation to address the shortcomings in previous research on transformative learning. However, research on the use of transformative learning in volunteer tourism has only started to appear in recent years, and at present, few relevant studies exist. For example, self-reflection, dialogue, and intercultural experience are three components (Taylor, 2008) that can be included in future research. Since the participants in the present study are all residents of Taiwan, regardless of whether they are community volunteers or voluntourists, it is difficult to obtain the effect of transformative learning of intercultural experience on the roles of volunteers. This is an important limitation of the research. Future research can examine transformative learning among cross-national voluntourists to make a further contribution to the transformative learning theory and application of volunteer tourism.

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