

Sense of place in environmental education

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Although environmental education research has embraced the idea of sense of place, it has rarely taken into account environmental psychology-based sense of place literature whose theory and empirical studies can enhance related studies in the education context. This article contributes to research on sense of place in environmental education from an environmental psychology perspective. We review the components of sense of place, including place attachment and place meanings. Then we explore the logic and evidence suggesting a relationship between place attachment, place meanings, pro-environmental behavior, and factors influencing sense of place. Finally, based on this literature we propose that in general environmental education can influence sense of place through a combination of direct place experiences and instruction.

Keywords: environmental education; sense of place; place attachment; place meaning; pro-environmental behavior

Introduction

The environmental education literature has demonstrated a growing interest in sense of place. Indeed, ‘sense of place is at the core of many environmental learning initiatives’ (Thomashow 2002, 76). Yet related research in environmental education has demonstrated lack of attention to theory and empirical studies in the sense of place literature. In this article, we review this literature and discuss how it can contribute to understanding of sense of place in the education context.

Environmental scholars have discussed the people–places relationship long before the development of a strong conceptual basis for sense of place. For example, 100 years ago in words that reverberate with the contemporary place-based education literature, Bailey (1911, 41) voiced concerns about the disconnect between people and their environment: ‘We are more likely to know the wonders of China and Brazil than of our own brooks and woods.’ Leopold (1949) pioneered the idea that landscapes have multiple aspects such as ethical, esthetic, economic, and ecological, which resonates with the current view of multiple dimensions of place meanings. Carson (1965) emphasized that first-hand experiences with natural phenomena in various places may contribute to children’s emotional connection to the world. Taken together, these comments echo contemporary writing about place-based education.

A vast theoretical and empirical sense of place literature developed since the 1960s has been scarcely applied to environmental education despite a surge in

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interest in place-based and other types of place-related education. Scholars have explored the idea of place and sense of place in relation to childhood development (Bott, Cantrill, and Myers 2003; Chawla 1992; Wilson 1997), restorative experiences and meaningful actions (Kaplan and Kaplan 2005), well-being (Sampson and Gifford 2010), pro-environmental behavior, knowledge, and attitudes (Duerden and Witt 2010; Vaske and Kobrin 2001), place-based education (Gruenewald and Smith 2008; Semken and Brandt 2010; Sobel 2005), situated pedagogy (Kitchens 2009), place-based perceptual ecology (Thomashow 2002), children's place preferences (Derr 2002), imaginative education (Fettes and Judson 2011), critical pedagogy of place (Gruenewald 2003; McInerney, Smyth, and Down 2011), and higher education (Barlett 2005a; Orr 1992). However, with a few notable exceptions (Ardoin 2006; Semken et al. 2009; Vaske and Kobrin 2001), environmental education researchers have rarely drawn on the sense of place literature.

Because the sense of place literature has rapidly proliferated in multiple directions, engaging this literature in its full complexity with respect to environmental education is far beyond the scope of a single journal article. We choose to anchor our engagement in environmental psychological sense of place traditions, while recognizing the need for additional work that is based on other approaches to understanding sense of place. The environmental psychology perspective has developed a robust theoretical framework complemented by numerous studies in different contexts. This literature can contribute to environmental education research by offering consistent terminology and research approaches exploring cause-and-effect relationships, thus helping to improve our understanding of educational activities effects on sense of place. With the goal to advance sense of place research in environmental education, in this article we review the sense of place literature and discuss how this knowledge can be applied to environmental education practice and research.

The sense of place concept

Since first proposed by geographers several decades ago (Lynch 1960; Relph 1976; Tuan 1974, 1975, 1977), the notion of sense of place has been marked by numerous revisions and inconsistent use of terms (Burdge and Ludtke 1972; Devine-Wright and Clayton 2010; Farnum, Hall, and Kruger 2005; Jorgensen and Stedman 2001; Manzo 2003). For example, scholars have used imprecise terms with little theoretical foundation such as rootedness, place affiliation, and place bonding (Farnum, Hall, and Kruger 2005). Further, concepts such as place attachment have been used interchangeably with notions such as insidedness or topophilia (Low and Altman 1992), or confused with the notion of sense of place (Vanclay 2008).

However, today many researchers, especially those using a psychological approach, suggest that sense of place is a combination of the two principal and complementary concepts that we review below: place attachment and place meaning (Figure 1) (Farnum, Hall, and Kruger 2005; Semken 2005; Semken and Brandt 2010; Semken and Butler Freeman 2007; Smaldone, Harris, and Sanyal 2005, 2008; Stedman 2000, 2002, 2003a; Stokowski 2002; Trentelman 2009; Van Patten and Williams 2008). Sometimes scholars follow a similar understanding of sense of place, but use different terms. For example, Malpas (2010) suggests that sense of place refers to a sense of belonging to places and the character of places, which resemble place attachment and place meaning, respectively; similarly, what Burdge

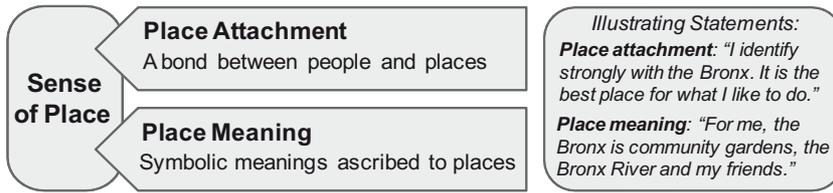


Figure 1. Components of sense of place.

and Ludtke (1972) call 'identification with place' resembles place attachment. Some scholars propose somewhat different definitions of sense of place such as 'a living ecological relationship between a person and a place' including 'physical, biological, social, cultural' and other factors (Kincheloe et al. 2006).

Place attachment in the sense of place literature refers to the bond between people and places, or the degree to which a place is important to people (Jorgensen and Stedman 2001; Low and Altman 1992; Stedman 2003b). Kyle et al. (2003) defines this concept as 'the extent to which an individual values or identifies with a particular environmental setting.' Within place attachment, researchers sometimes distinguish between place dependence and place identity (Arnberger and Eder 2008). Place dependence is the potential of a place to satisfy an individual's needs by providing settings for his or her preferred activities (Farnum, Hall, and Kruger 2005; Halpenny 2006; Stokols and Shumaker 1981; Vaske and Kobrin 2001). For example, an urban resident may be attached to a community garden because it provides a space for her favorite activities. Place identity is the extent to which a place becomes part of personal identity or embodied in the definition of the self (Cuba and Hummon 1993; Farnum, Hall, and Kruger 2005; Hauge 2007; Korpela 1989; Lalli 1992; Manzo and Perkins 2006; Proshansky, Fabian, and Kaminoff 1983; Trentelman 2009; Uzzell, Pol, and Badenas 2002; Vaske and Kobrin 2001). For example, a resident of the Bronx may be attached to this borough because it reflects the kind of person he believes he is. Although place attachment usually implies a positive bond between people and places (Vanclay 2008), scholars call for a broader understanding of this phenomenon by considering negative or ambivalent feelings toward places (Manzo 2005). For example, they discuss negative place attachment when certain aspects of places are in conflict with self-identity, do not serve a person's needs, or repel people (Klenosky et al. 2008; Semken and Butler Freeman 2007) making them want to escape certain places (Cannavò 2007).

Researchers often use Likert-scale surveys to assess place attachment. This scale usually consists of items such as 'This is the best place for what I like to do' and 'I feel like this place is part of me' (Moore and Graefe 1994; Stedman 2000; Williams and Roggenbuck 1989). Though place dependence and place identity are conceptually different, sometimes these components of place attachment are highly correlated in field studies and researchers treat them as one factor (Jorgensen and Stedman 2001; Moore and Scott 2003). Although place identity and place attachment are often positively correlated, some researchers treat them separately because these constructs 'do not act uniformly in relation to other variables' such as beliefs about anthropocentrism and other environmental attitudes (Burduk, Thomas, and Tyrrell 2009). Some researchers use separate Likert scales to measure attachment towards natural vs. civic aspects of places (Scannell and Gifford 2010). While most research has measured place attachment in adults, two studies used place attachment surveys

with youth in a natural-resources-based work program (Vaske and Kobrin 2001) and in urban environmental education programs (Kudryavtsev, Stedman, and Krasny 2010).

Place meaning refers to the symbolic meanings that people ascribe to settings. Place meaning is defined by answers to descriptive questions such as ‘What does this place *mean* to you?’ or ‘What *kind* of a place is this?’ (Davenport and Anderson 2005; Jacobs and Buijs 2011; Smaldone, Harris, and Sanyal 2005, 2008; Stedman 2000b, 2002, 2008). The idea of people ascribing certain qualities to places, such as cultural values associated with a spatial area, has a long history in the social sciences (Firey 1945). Relph (2007) argues that ‘the meanings of places may be rooted in the physical settings and objects and activities, but they are not a property of them – rather they are a property of human intentions and experiences.’ Place meaning is a multidimensional construct and may reflect an individual’s environment, social interactions, culture, politics, economics, and esthetic perspectives (Ardoin 2006; Young 1999a), a mix of reinforcing or contradictory personal experiences (Kong and Yeoh 1995), as well as history of places (Kong and Yeoh 1995; Rotenberg 1993; Ryden 1993, 2008). In the same location different people may have different place meanings (Cannavò 2007, 38; Stedman 2008). As an illustration, one person may think of the Bronx in New York City as the birthplace of hip-hop culture, low-income housing projects, and his close friends, while another person may hold different place meanings for the Bronx such as her community garden, the wildlife in waterways, environmental injustice, and her community-based organization. Multidimensionality of place meanings is confirmed by studies in which people name distinctive natural and social attributes of places (Cantrill 1998) or in which place meanings are attributed to different themes such as ‘environment,’ ‘self,’ and ‘others’ (Gustafson 2001). Place meanings may serve as the reason for place attachment and depend on the value that people put on these meanings (Stedman 2006b).

Researchers have used various methods to explore place meaning. On the one hand, researchers have employed quantitative methods such as surveys to determine how pronounced specific place meanings are. For example, Stedman (2002) used Likert-scale surveys to assess specific dimensions of place meaning among lakeside residents. The survey asked participants to rate belief statements related to environmental dimensions of sense of place such as ‘My lake is a place to escape from civilization;’ ‘My lake is a place of high environmental quality;’ and ‘My lake is a pristine wilderness.’ Similarly, Young (1999b) asked people to use a five-point scale to rate how well a place can be described by 30 place meaning items such as ‘ancient,’ ‘pristine,’ ‘overdeveloped,’ and ‘crowded.’ Other researchers have used qualitative methods to explore the whole spectrum of place meanings that participants assign to places, as well as experiences through which these meanings are created. For instance, scholars have used open-ended surveys asking participants to describe memorable places and ‘explain what these places mean to them’ (Schroeder 1996), conducted semi-structured interviews with questions such as ‘How would you characterize this place?’ (Jacobs and Buijs 2011), or combined open-ended surveys with in-depth interviews (Smaldone, Harris, and Sanyal 2008). Sometimes map-based research approaches are used (Brown and Raymond 2007) to help research participants determine places that hold some place meanings for them and describe these meanings. To capture even more descriptive and nuanced place meanings as well as to elicit experiences defining place meanings, some scholars have used variations of the narrative approach (Burley et al. 2005; Worster and

Abrams 2005), relied on photo-narratives (Beckley et al. 2007; Stedman et al. 2004), and involved participants in drawing maps combined with informal conversations generating ethnographic data (Sampson and Gifford 2010) and in storytelling to provide ‘rich metaphors and detailed imagery’ converging along several large themes (Davenport and Anderson 2005).

Sense of place – including place attachment and place meaning – can be expressed for various types of places. For example, researchers have explored sense of place for a river (Bricker and Kerstetter 2000), city or neighborhood (Hidalgo and Hernández 2001), wildlife refuge (Payton 2003), trail (Kyle, Graefe, and Manning 2005), lake (Stedman et al. 2007), and urban forest (Arnberger and Eder 2008). In terms of size, people express sense of place in relation to places of various scales: from a settlement to a country (Shamai and Ilatov 2005), from a town to a larger ecoregion (Ardoin 2009), from small-scale objects to large-scale cities and regions (Altman and Low 1992), from a very specific spot to the nation (Vanclay 2008), and from a scenic lookout point to a large national park (Smaldone, Harris, and Sanyal 2008).

In short, although scholars of sense of place use different terminology, we generally can agree on two main components of sense of place. Place attachment reflects how strongly people are attracted towards places, while place meaning describes the reasons for this attraction.

Sense of place and pro-environmental behavior

A number of scholars have suggested that sense of place fosters pro-environmental behavior, and related emotions, attitudes, and behavioral intentions, which is an important goal of environmental education (Heimlich and Ardoin 2008; Hungerford and Peyton 1986; Hungerford and Volk 1990; Monroe, Andrews, and Biedenweg 2007). For example, Relph (1976, 37) proposed that place rootedness leads to ‘a sense of deep care and concern for that place.’ Further, Olwig (1982) wrote, ‘To encourage the development of sense of place in the child is to provide the basis . . . for the sense of personal concern which is necessary if it is to take an active interest in the future of its environment’ (cited in Chawla 1992, 83). In the same vein, Orr (1992, 1994) builds on Tuan’s (1977) theoretical framework and contends that people will act responsibly towards their immediate environment if they have a sense of rootedness. Similarly, drawing on ecojustice philosophy, scholars suggest that affective ties to places may motivate people to be better informed about local environmental issues and make decisions beneficial to their communities (Adams, Ibrahim, and Lim 2010). Finally, based on Relph’s (1976) proposition that place attachment engenders a sense of responsibility and Gould’s (1991) contention that people would not fight for what they did not love, Walker and Chapman (2003, 74) propose that ‘a positive relationship may exist between a person’s sense of place and pro-environmental intentions he or she has in regard to that place.’

Place attachment fostering pro-environmental behavior

Supporting these more general statements, empirical research has demonstrated significant correlations between place attachment and pro-environmental behavior. For instance, Kaltenborn (1998) surveyed 300 residents in Spitsbergen, Norway and

found a significant correlation between strength of place attachment and willingness to actively contribute to solutions for potential environmental problems, such as cleaning up oil spills along the shoreline. Stedman (2002) surveyed a large sample of property owners in a rural lake region in Wisconsin and found that stronger place attachment was positively associated with behavioral intentions to maintain valued qualities of their environment such as scenery and water quality. Walker and Chapman (2003) surveyed 258 visitors to a Canadian national park and found through regression analysis that place attachment positively predicted pro-environmental behavioral intentions such as volunteering in park projects. In a survey of 305 residents in a rural community in Norway, Vorkinn and Riese (2001) demonstrated that place attachment was a stronger predictor of negative attitudes towards a major hydropower development than a combination of socio-demographic variables. Ryan (2005) surveyed 328 park users in urban settings in Michigan and found that attachment to urban parks predicted residents' and environmental volunteers' concern about conserving nature in cities. Finally, in a regression analysis study Rioux (2011) surveyed 102 children aged 14–17 in a secondary school in France, and found that attachment to their neighborhood is a significant predictor of the behavior of collecting used batteries for recycling. Yet these studies do not demonstrate that place attachment *causes* pro-environmental behavior.

Several studies using structural equation modeling, including confirmatory factor analysis, have teased out a cause-and-effect relationship between place attachment and pro-environmental behavior. In a study that tested this relationship in children, Vaske and Kobrin (2001) used a post-program survey of 182 youths aged 14–17 in a conservation work program and found that place attachment predicted general and specific environmentally responsible behaviors such as trying to convince others to act responsibly towards the environment and joining in community cleanup efforts. In a study with adults, Halpenny (2006, 2010) used structural equation modeling to analyze the data from a survey of 355 park visitors and found that place attachment predicted both place-specific pro-environmental behavior such as volunteering to protect a specific park and general pro-environmental behavior such as reducing energy consumption. Finally, Payton, Fulton, and Anderson (2005) used structural equation modeling to analyze a survey of 451 wildlife refuge visitors and found that place attachment contributed to individual and institutional trust, which in turn, as part of the same model, was a significant predictor of civic action such as 'donation of time, effort, and resources' at the refuge.

Place meaning fostering pro-environmental behavior

Several researchers examined the effect of place meanings on pro-environmental behaviors, attitudes, and awareness. For example, Manzo and Perkins (2006) reviewed the environmental and community psychology literature and concluded that people are motivated to protect places that are meaningful to them. In a study using a narrative approach with 29 residents in rural Welsh communities, Henwood and Pidgeon (2001) found that residents expressed concerns about potential urbanization that would threaten trees and forests, which carry symbolic meanings that inform place identity in those communities. Brehm, Eisenhauer, and Krannich (2006) used regression analysis of surveys of 566 residents in rural communities in Wyoming and Utah and found that place meanings related to nature strongly predicted concerns about protection of natural resources. These

studies are consistent with Stedman's (2003a) suggestion that people will be more likely to protect places to which they are attached against outside threats that directly challenge their place meanings, and Stewart's (2008) idea that 'our place meanings tell us which alternatives [of land use] to support, and which ones to oppose.' Similarly, people who view a stand of trees as 'biological legacy and pristine ecosystem' would exhibit a different natural resources management behavior from people who view this place as a source of 'per-capita income supporting independent lifestyles and well-being of the nation' even if they have the same place attachment (Cheng, Kruger, and Daniels 2003). In sum, these studies suggest that what we call 'ecological place meaning' – one of the dimensions of place meanings reflecting natural elements or ecological features of places – may be related to behaviors that protect these elements. Research has not yet explored whether other dimensions of place meanings, such as social or architectural, influence pro-environmental behavior, but such work would be a welcome addition to that which focuses on ecological meanings. It is possible that ecological place meaning combined with other meanings may have an even stronger impact on pro-environmental behavior – for example, when people are attached to and appreciate a river not only because of its ecological meaning but also because of the cultural and social meanings symbolizing this place. It is also possible that other meanings – for example, those based on community well-being and/or social relationships – may lead to behaviors tied to the ecological environment or to improving other aspects of the local community.

In general, theoretical and empirical studies provide convincing logic and evidence that sense of place affects pro-environmental behavior, yet research about this relationship can be challenged in several ways. First, the impact of place attachment on pro-environmental behavior has been explored mostly in places with abundant natural elements such as parks and in rural areas. It is unclear whether this relationship applies in more urbanized or disturbed settings. Second, the majority of studies were conducted with adults, and we are unsure to what extent their conclusions are applicable to younger audiences. Third, little is known about how place attachment and ecological place meanings interact with other factors influencing pro-environmental behavior. For example, one study found that place attachment did not predict pro-environmental behavior such as protecting remnant vegetation by farmers in northern Victoria, Australia, but the authors suggest that this type of on-farm pro-environmental behavior is constrained by 'contextual factors such as income, time and equipment' (Gosling and Williams 2010).

Unfortunately, few studies have examined the combined effect of place attachment and ecological place meaning on pro-environmental behavior, yet we suspect that it is the combination of strong place attachment *and* emphasized ecological place meaning that fosters pro-environmental behavior more so than these two factors taken separately. For example, Scannell and Gifford (2010) developed a two-dimension place attachment survey separately measuring attachment to the natural and to the civic environments. They used regression to analyze surveys from 104 community residents in Canada and found that place attachment based on the natural rather than the civic aspects of a place predicted pro-environmental behavior. One may interpret this finding and the studies reviewed above as suggesting that strong place attachment *without* emphasized ecological place meaning may not necessarily contribute to pro-environmental behavior.

Factors influencing sense of place

Many environmental educators seek to influence sense of place among students in efforts to foster environmental behaviors, yet research on how this can best be done is lacking. Below, we review factors affecting place attachment and place meaning. This literature can inform environmental education programs and research addressing sense of place.

Development of place attachment

Below we argue that place attachment can be developed through both (1) direct experiences with places, especially long-term, frequent, and positive experiences and (2) learning about places from indirect sources rather than direct contact. An experiential perspective suggests that direct engagement with a place over long periods of time or frequent place visits can forge place attachment (e.g. Relph 1976; Tuan 1977; Williams and Patterson 1999). A number of empirical studies support this idea. For instance, Moore and Scott (2003) conducted a regression analysis of surveys of 438 recreational trail users in a park and found that frequency of use of the trail was a significant predictor of their place attachment. Likewise, Lewicka (2005) used structural equation modeling to analyze surveys of 1328 residents in various regions in Poland and found that residence time was a significant predictor of place attachment towards inhabitants' neighborhoods. Evidence that less frequent and shorter encounters with a place do not strengthen place attachment comes from Morgan (2009), who surveyed 198 participants of an interpretation program in a cave in Missouri and found that their place attachment was not significantly different before and after a one-time cave tour. Finally, little research has been done to address the question 'What happens to sense of place when places change?' (Davenport and Anderson 2005), although Beckley (2003) hypothesized that 'a person's attachment to place will increase or decrease in accordance with both positive and negative ecological changes and sociocultural changes in that place.'

Besides the frequency and length of encounters with places, a cluster of studies mentions active engagement with places as driving place attachment. For example, scholars hypothesize that participating in environmental stewardship activities enhances attachment to sites that are being restored or to natural areas in general (Barlett 2005b; Beckley 2003; Gobster and Hull 1999; Wilson 1997). Supporting this idea, anecdotal evidence suggests that maintaining community gardens enhances connectedness between gardeners and a place (Lynch and Brusi 2005). In another project supporting this idea, Ryan, Kaplan, and Grese (2001) surveyed 148 adult long-term environmental volunteers in Michigan and found that involvement in restoration activities strengthened participants' attachment towards local natural areas. Finally, in a study of 328 park users, Ryan (2005) found that attachment to specific urban parks was stronger among frequent park users and neighbors than among environmental volunteers who became more generally attached to the ecosystems represented by the parks.

Some studies indicate that interactions with other people also influence place attachment. For instance, Eisenhauer, Krannich, and Blahna (2000) surveyed 434 residents in Utah and found that the most important reasons for place attachment were social interactions and environmental characteristics of places such as a place's scenery and wildlife. Chawla (1992) used environmental autobiographies and reviewed theoretical work to suggest that place attachment in children may be

facilitated by a sense of security, the ability to influence the environment, and the opportunity to be a functional community member. Finally, Barlett (2005a) interviewed 37 faculty members at Emory University who learned about the local environment while introducing environmental issues into their course materials, and found that these faculty experienced a growing connection to ecological and built dimensions of Atlanta and the campus through ‘learning the names of species, face-to-face narratives, and connections with ethics and personal values’ as well as the woods walks they took with their peers.

Although Brocato (2006) argues that people cannot be attached to places that they have ‘never visited or visited only a couple of times,’ several studies have suggested that individuals may develop place attachment to distant places. For example, some researchers have proposed that people may be attached to a place that they have never experienced directly if they think that this place ‘may afford them a unique setting in which to achieve their goals’ (White, Virden, and van Riper 2008). Similarly, referring to place identity and building on Tuan’s and Relph’s ideas, Warzecha and Lime (2001) propose that ‘it is possible for people to develop emotional/symbolic ties without ever visiting a particular place.’ This idea is consistent with Semken and Brandt’s reasoning (2010): ‘While making meaning in places, people frequently form emotional attachments to them. Such place attachments can vary in intensity from simple acknowledgment that a place exists to a willingness to make meaningful personal sacrifices in order to preserve or enhance the place.’ This idea is supported by a survey study of 386 introductory geology students in Arizona, in which students who had never been to the Grand Canyon showed some level of place attachment, although weaker than in students who had visited the Grand Canyon (Semken et al. 2009).

Development of place meaning

Greider and Garkovich (1994, 2) propose that ‘meanings are not inherent in the nature of things’. In the same vein, Davenport and Anderson (2005) posit, ‘people assign meanings to places and derive meaning in their lives from places.’ Thus place meanings are created, reproduced, and modified by people (Stewart 2008). Similarly to the development of place attachment, we suggest that place meanings can be purposefully developed through two primary mechanisms that are not mutually exclusive: (1) creating place meanings through first-hand experiences in places and (2) learning place meanings from written, oral, and other sources, including communication with other people. Scholars argue that experiencing unique attributes of places – including geographical features such as rivers and lakes as well as cultural attractions – may facilitate the creation of particular place meanings (Lalli 1992). In this case the physical environment, although not deterministic of meanings, sets bounds for the possible experiences and place meanings (Goodrich and Sampson 2008; Sampson and Goodrich 2009; Stedman 2002, 2003a, 2003b). For example, through experiencing an urban place it may be possible to create such place meanings as ‘concrete jungle’ or ‘well-maintained public parks,’ but less likely ‘wilderness’ or ‘native landscapes.’ In line with this reasoning, Cuba and Hummon (1993) infer that place meanings are informed by the structure of experiences with places and involvement in social activities. Empirical studies also demonstrate that repeated and varied direct experiences in places, positive or negative pivotal moments, and feeling of safety may also contribute to place meanings (Manzo 2005, 2008).

Scholars have suggested that place meanings are created, cultivated, and modified not only through direct place-based experiences but also by such means as stories, myths, literature, promotional materials, folklore, paintings, music, films, history, casual conversations, and memory (Basso 1996; Schenkel 1992; Tuan 1977). Place meanings can be articulated and reproduced through media independently of the actual location (Giaccardi and Palen 2008; Malpas 2010), or through activities organized in actual places such as community art events and ‘walks and talks’ programs (Vanclay 2008). Stokowski (2002) suggests that ‘people actively create meaningful places through conversation and interaction with others.’ Similarly, Johnstone (1990) reasons that ‘our sense of place and community is rooted in narration’ (cited in Stokowski 2002). This view resonates with the idea that ‘collective storytelling plays a critical role in supporting a situated and narrative mode of interpretation and construction of our sense of place and heritage’ (Giaccardi and Palen 2008), and that telling narratives sometimes may be more important than physical alteration of the landscape to alter place meaning (Vanclay 2008). Consistent with this idea, researchers suggest that collective memories of slavery and sharecropping may negatively influence African Americans’ place attachment to wildland recreation areas (Johnson 1998; Johnson and Bowker 2004) and parks (Kyle and Johnson 2008). Yet acknowledging history and presence of different ethnic groups in a place may improve their view of this place (Low et al. 2002).

Supporting this literature, studies have demonstrated that both direct experiences of places and learning place meanings from other people or interpretative media may contribute to creating place meanings. For example, Lim and Barton (2010) used ethnographic research methods to explore how 19 children in New York City developed their sense of place, referring mainly to their place meanings. These researchers found that children assign meanings to places when they learn about the history of places or engage in reciprocal relationships with other people in their neighborhood. Stewart, Hayward, and Devlin (1998) conducted interviews with 64 visitors to a national park in New Zealand and found that symbolic place meanings could be developed even during short visits to the park through guided tours, interpretation materials, leaflets, and display panels. In addition, interviews with homeowners (Case 1996) and residents near a national park (Smaldone, Harris, and Sanyal 2008) revealed that journeys away from local settings also may help people to discover meanings of their local places that otherwise may be taken for granted. Finally, interpretive investigation of place meanings ascribed by 25 community members to Niobrara River in Nebraska showed that place meanings may evolve over time – for example, young people may directly experience places yet take them for granted and realize their unique ecological meanings only when they grow up (Davenport and Anderson 2005).

Environmental education influence on sense of place

The literature reviewed thus far would suggest that fostering ecological place meanings and enhancing place attachment may contribute to pro-environmental behaviors. However, we are not aware of research on precisely how environmental education can influence sense of place, in spite of the fact that some scholars indicate that place meanings can indeed be taught or influenced (Lynch 1960; Stedman 2006a). Here we will build on our discussion of factors contributing to sense of

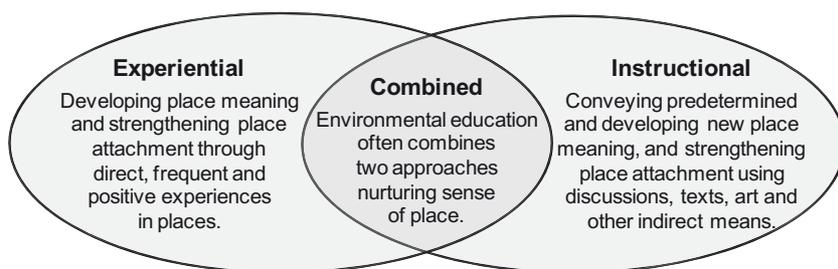


Figure 2. Combining two approaches influencing sense of place.

place to explore how such factors may be used to achieve one of the goals of environmental education: pro-environmental behavior.

The previous section suggests that sense of place – including place meaning and place attachment – is shaped mainly through direct experiences in places and indirect learning about places. Based on this literature, we observe that environmental education programs use two general approaches to influence sense of place – *experiential* and *instructional* – often in combination (Figure 2).

The experiential approach, based on the idea that place meanings emerge from experiences in physical settings (Relph 2007), implies that participants of environmental education develop place meanings through first-hand encounters with places. Consistent with the literature about factors influencing sense of place, environmental education may nurture sense of place through long-term, frequent or positive experiences in places, and active engagement with places. Examples of experiential activities without place-related interpretation or formal instruction include unstructured time in outdoor programs to explore places on one's own, or at least without intentional teaching about a place. The experiential approach is perhaps related to behavioral insidedness, 'a situation involving the deliberate attending to the appearance of place ... figuring out what is where and how the various landmarks, paths, and so forth all fit together to make one complete place' (Seamon 1996). However, the experiential approach alone cannot convey some place meanings if they are invisible (Campbell 2008). For example, the ecological history and cultural traditions of a place are not always directly experienced, and require instruction or interpretation to become place meanings.

The instructional approach, in contrast, contributes to place meaning and place attachment through teaching and negotiation about places by indirect means such as lectures, storytelling, books, art, movies, websites, and other media. This approach emphasizes meanings conveyed by instructors rather than experiential creation by students; however, it maintains a role for student participation in construction and modification of place meanings. For example, students can contribute to textual representations of places (Cormack, Green, and Reid 2008) or share their own narratives related to their experiences in and meanings of the urban or other environment (McClaren 2009). New meanings may emerge through conversations with peers and educators, and through social and reflective learning. Using this approach, education may convey certain place meanings or help students construct meanings even without visiting a place, for example, through discussions and watching a documentary about a national park. What place meanings besides ecological may or should be promoted through environmental education is a topic for future debates, which may

involve a political discussion as to what place meanings are more legitimate or desired than others. Some writers, for example, call for a plurality of place meanings to promote diverse place use (Cannavò 2007). Similarly to the experiential approach, place meanings nurtured through instruction may serve as the base for place attachment. At the same time, educators should be aware of other factors influencing sense of place such as social group identity (Cheng, Kruger, and Daniels 2003), occupation (Jacobs and Buijs 2011), gender, race, ethnicity, and cultural identity (Kyle and Johnson 2008; Manzo 2005). Perhaps the impact of these factors depends on contexts; for example, race and gender may be crucial in some settings but not others.

The combined approach takes advantage of nurturing place meanings both through direct place experiences *and* through instruction, negotiation, and interpretation. In this approach place meanings are not only freely created through place-based experiences, but also conveyed by and emerge from discussions among educators and participants of environmental education. This approach resonates with the idea that place meanings are constructed not only through direct experiences, but also through social construction of place meanings before visiting a place (Young 1999a). Whether purposely or not, many education programs combine experiential and instructional approaches, which we think is an effective strategy to nurture place meaning and strengthen place attachment. It should be noted that combining direct, perceptual experiences of objects of learning with some kind of interpretation or instruction is not a new idea. For example, a century ago educators promoted observations of natural objects with a follow-up story-based interpretation of what students saw (Comstock 1904). Contemporary examples of education programs combining the experiential and instructional approaches exist in place-based education, interpretive education, civic ecology education, and urban environmental education, which we briefly review below.

Place-based education refers to a broad range of education programs in which students learn about local natural, built, and social environments through inquiry, environmental action, and other hands-on activities in a specific place (Hutchinson 2004; Sobel 2005). The place-based education literature does not necessarily emphasize sense of place as the primary outcome of place-based education programs but more often focuses on academic achievement and appreciation of the natural world (Dubel and Sobel 2008; Smith and Sobel 2010). Yet some writers and scholars suggest that such programs are purposefully trying to enrich sense of place (Semken et al. 2009) or to 'enable students to establish a connection to a place' (Green 2008), and that sometimes 'sense-of-place education' may be another name for place-based education (Heimlich 2007). We agree that place-based education has a much broader mission than nurturing sense of place, and a much broader focus than just fostering behaviors and attitudes. Yet from the standpoint of the current discussion we can observe the use of experiential and instructional approaches in place-based education. For example, certain place-based programs are attempting to reconnect people to their local places through a combination of experiential methods such as field walks, and instructional methods based on social constructivist pedagogy such as map-making, reflective writing, and conversations (Wason-Ellam 2010).

Many outreach and interpretation programs also combine experiential and instructional approaches. For instance, Safari 7 offers online podcasts for a self-guided tour of urban wildlife and various habitats along a subway line in New

York City, in which participants learn about a place through listening to interviews, sounds, and music, as well as through visiting actual parks, cemeteries, buildings, and waterways, and observing animals and plants. Along similar lines, civic ecology education (Krasny and Tidball 2009a, 2009b; Tidball and Krasny 2007) links experiential and instructional approaches through environmental learning activities conducted while engaging in environmental stewardship. The stewardship activities offer place-based experiences and educators direct participants' attention to social-ecological components of places during the planning and implementation of such activities. As the final illustration of the combined approach to influencing sense of place, both experiential and instructional methods are prominent in various urban environmental education programs (Kudryavtsev, Stedman, and Krasny 2010), which involve students in environmental stewardship, ecosystem restoration, urban farming, social and environmental justice, activism, inquiry, monitoring and exploration activities that are place-based and relate to social-ecological aspects of places. For example, in these programs students may visit a park and interview park visitors about ecosystem services of trees – which combines experiencing a place and focusing students' attention on certain values of this place as part of instruction.

These examples show that it is possible to apply the sense of place literature – including terminology and relationships among various constructs – to environmental education practice and research. In addition to conceptualizing sense of place, this literature equips us with qualitative and quantitative research tools for exploring the relationship between education activities, place attachment, and place meanings. In other words, attention to the sense of place literature may enrich an already vibrant place-informed scholarship in environmental education.

Several caveats need to be emphasized. First, our treatment of the sense of place literature in this work is based mainly on a positivist framework, while some elements within the broader place-related literature emphasize a more phenomenological perspective (e.g. Thomashow 2002), which 'provides a rich understanding of complex, intangible phenomena that do not readily lend themselves to psychometric measurement,' and moves 'away from the objectification of place and its meaning' (Manzo 2005). See Beckley et al. (2007), Stedman et al. (2007), and Williams and Patterson (2007) for a lively discussion of the relative merits of different approaches. We suggest that synthesizing phenomenological with operationalized ideas about places may give us new ways of thinking about and exploring the role of place in education. Another aspect to consider is that we built on the empirical sense of place literature that rarely discusses place meanings other than ecological in relation to pro-environmental behavior. We agree that not all place meanings are relevant to natural resources management (Jacobs and Buijs 2011), including pro-environmental behavior, yet it is possible that some cultural, social, and other place meanings do impact the ways people influence their places and more broadly their environment.

Finally, the ideas in this article would be very different if in addition to pro-environmental behavior we also focused on other desired outcomes of environmental education related to sense of place. We assert that expanding this range of outcomes under consideration would be very useful. Indeed, environmental educators may find other reasons to be concerned about place meanings and place attachment. For example, scholars have suggested that sense of place or relationship with places may be related to self-identity (Ballinger and Manning 1998; Malpas 2008), social capital (Beckley, 2003), social group identity (Cheng, Kruger, and Daniels 2003), ecological identity (Thomashow 1995), environmental justice and

empowerment for urban youth (Bott, Cantrill, and Myers 2003), sense of community (Wyckoff-Baird 2005), cultural competence (Greenwood 2009), self-formation and social formation (Kitchens 2009), emotional well-being and physical health (DeMiglio and Williams 2008; Johnson and Zipperer 2007; Millennium Ecosystem Assessment 2005; Steele 1981), general attachment to natural areas (Chawla 1992; Ryan 2005), and adaptive ecosystem management (Bott, Cantrill, and Myers 2003).

We hope that the idea of experiential and instructional approaches – coupled with the literature about sense of place – will spark further discussion about environmental education influencing sense of place. At the same time, scholars can certainly use alternative approaches to interpreting the sense of place literature and apply it to environmental education in a different way. In fact, environmental education would benefit from scholarship embracing the plurality of theoretical interpretations, contexts, and research methods enriching our understanding of sense of place and its role in the education context.

Conclusion

The field of environmental education has demonstrated an interest in sense of place and related concepts, although it has rarely drawn explicitly on the sense of place literature. We applied one specific element of this literature – that which draws strongly on environmental psychology – to environmental education in order to facilitate further research about this concept in the education context. We envision this manuscript as an initial foray into a broader discussion of sense of place in environmental education that will draw not only on environmental psychology but also on critical theory, anthropology, cultural geography, and other frameworks and studies. In agreement with the need to use a combination of methodological approaches in environmental education research (Scott 2009) and the call for methodological diversity in sense of place research (Stedman and Beckley 2007), we suggest that multiple research approaches may further improve our understanding of the value and significance of sense of place, and its relationship with other outcomes of environmental education. Such research may support new creative environmental education approaches and improve our ability to address environmental and social issues.

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