

**ECOLOGICAL EDUCATIONAL TRAIL, AS LINKAGE BETWEEN NATURAL AREAS
AND HISTORICAL HERITAGE,
PRESENTED BY THE CASE STUDY OF PĂNET VILLAGE**

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Abstract

With the expansion and overcrowding of cities, there is an ever-increasing demand and need for “close to nature” areas, which provide recreation and relaxation. The aim of the study is to present a method for the creation of an ecological educational trail, which can link the natural places with the local historical heritage of settlements in Transylvania. Educational paths highlight the values of the past and transfer it in such an actuality and modern way that can be approached from several sides. This symbolic linkage created by the educational trail is between the present represented by the natural areas, and the church and the central areas next to it representing the historical heritage, as the past. The planned educational trail is located in the Pănet settlement, in the Transylvanian plain, 11 km from Târgu Mureș. The goal is to re-think and recall the very close connection between humans and nature, as in the old days. For this purpose, the educational trail proves to be a promising solution given this rich vegetation and natural features in the area.

Key words: ecological educational trails, livable places, sustainable city.

INTRODUCTION

The experience of being surrounded by nature is truly remarkable. Some poetic lines aptly capture the essence of this sensation by alluding to the eternal beauty and mystery that nature embodies. These two qualities are what natural environment render so significant.

Unfortunately, many individuals perceive this importance to be a malleable concept, which leads to widespread ignorance. Consequently, both the beauty and mystery of nature are at risk of being compromised. It is possible to instill a sense of significance for nature through deliberate education and nurturing. Two key qualities that can serve as effective tools in this endeavor are yet to be identified, and their identification is the primary motivation for this research.

As cities expand and become more crowded, there is an increasing demand for areas that are "close to nature" provide recreation and relaxation for both local residents and visitors. The avalanche of environmental issues in recent years has intensified the use of environmental education as a means to inform and instruct individuals regarding the dangers

of pollution and the deterioration of ecosystems (Ribeiro et al., 2012; Karatas & Karatas, 2016). Thematic educational trails can effectively fulfill the need to raise awareness about environmental issues. In addition to providing opportunities for active recreation and relaxation, these trails can also serve as means of drawing attention to the significance of environmental factors, educating visitors about ecological principles, and promoting nature-based tourism (Peter & Cheruto, 2013). Nature-based tourism is commonly acknowledged as a rapidly growing sector within the world's largest industry, and serves as a crucial bedrock for conservation. Although visit rates -assessed by two distinct methodologies- are indeed decreasing in certain affluent countries, data from approximately three-quarters of nations where such information is available indicate that visit to protected natural areas is on the rise (Balmford et al., 2009).

The aim of the study is to present a method for creating an ecological educational trail that links natural areas with the local historical heritage of settlements in Transylvania. This symbolic linkage created by the educational trail connects the present, represented by the

natural areas, with the past, represented by the church and central areas nearby.

The planning of the educational ecological trail is based on the theory of Shamala M.M., (2020). According to her theory, the ecological trail emphasizes that humans are guests, not masters, of nature and should respect the rules of the natural environment. This approach encourages the protection, appreciation, and observation of nature, recognizing that humans are an integral part of it (Shamala, 2020).

There are numerous studies worldwide emphasizing the significance of preserving the flora and fauna along the route of ecological educational trails (Blanco et al., 2021; Silva et al., 2019; Dunkley, 2016). One of the primary objectives of the planning process was to emphasize this issue. The design of the central part clearly depicts the connection between the natural fields and the "soul" of the village, with religious belief, community, and memory being the main pillars of society.

The ecological educational trail presents a promising solution, leveraging the rich natural features and vegetation in the region. Moreover, this project provides an opportunity to promote nature-based tourism, which can significantly contribute to the settlement's economic development. The trail creates and represents a valuable resource that effectively highlights the region's natural beauty. The areas surrounding the trail host a diverse range of spontaneous flora, herbaceous plant associations, and mature trees, all of which have been largely untouched. To minimize any disturbance to the natural areas, it is crucial to avoid introducing additional plants along the trail. Rather, the focus should be on preserving the existing natural environment by taking as little as possible from these pristine areas. Educational trails offer a contemporary approach to the transmission of values from the past and presents various perspectives.

METHODOLOGY

The aim of this study is to determine optimal strategies for establishing a symbiotic relationship between humans and nature, with the goal of providing ecological, economic, and social benefits.

The research methodology comprises two primary components. Firstly, the proposed subject is contextualized through a literature review of the related site, focusing on two perspectives: preservation of nature and constructed heritage. Secondly, a comprehensive analysis of the territory is conducted, involving multiple map documentation and a case study of the planned educational trail that links the main objectives.

The multifaceted planning program encompasses two main components. The first component is the central square, which will be created by connecting the churchyard and the memorial square. The second component is the educational trail, which covers the eastern portion of the administrative unite of the settlement.

LITERATURE REVIEW

There is currently no consensus on a universally accepted definition of educational trails, which may be attributed to the variability of the nature trail concept across different countries and the potential difficulty in distinguishing it from cultural or nature walkways. Additionally, it may be challenging to determine when a thematic path can be classified as a nature trail. According to Hungarian literature, an educational trail is typically characterized by a designated thematic route with marked stations featuring information boards (Fodór, 2018).

In addition, the educational trail must also address social needs and serve as a means to satisfy ecotourism functions or provide an alternative but meaningful way to spend leisure time, if applicable (Kollarics, 2015).

The educational trail can be viewed as a path that connects various stations, featuring ecological attractions along the way (Bajor-Lampert & Bajor, 2018). "Eco-attraction" is a term that has emerged from the field of ecotourism studies and refers to natural features or phenomena that are appealing to visitors (Orams, 1995).

The genesis and evolution of educational trails have a fascinating history marked by cause and effect, which aptly reflects the significance of positive reinforcement of the nexus between humans and the environment in shaping

consciousness, not only in contemporary times but also back from the beginning of the 20th century (Kollarics, 2015). Nature trails have a significant role in the sphere of social life, particularly concerning nature and its conservation. Unfortunately, these concepts are not well understood by the public nowadays. Hence, it is essential to address this issue since numerous valuable species still exist, not only in rural areas but also in urban regions (Bajor-Lampert, 2014).

Despite the significant developments in the planning and design of educational trails in the 21st century, poorly executed plans are still prevalent, including in Central-Eastern Europe (Fodór, 2018). Ecotourism, a widely utilized economic diversification tool in developing countries, is commonly perceived as a means to protect ecosystems, preserve local cultures, and spur economic development (Che, 2006).

On the topic of education, it is important to emphasize the significance of meticulous planning when designing an educational trail, and to consider the objectives that it aims to achieve. One of the primary considerations is the age group of the intended audience, which should inform the selection of relevant topics that align with the educational and pedagogical framework. According to surveys, the ideal length for an educational trail is between 1 to 1.5 hours. In areas with undisturbed nature, the use of materials and the extent of intervention should be carefully considered when designing the trail (Kiss, 1999; Fodór, 2018). The scope and form of information dissemination varies depending on the target audience and the subject matter. There are various approaches to convey the abundance of information surrounding educational trails, ranging from basic signage to advanced technological solutions (Kollarics, 2015; Fodór, 2018).

URBAN DEVELOPMENT

The research regarding to the proposed ecological educational trail is located in Pănet, a village situated in the Transylvanian plain approximately 11 km from the city of Târgu Mureș and 6 km from the Mureș River. (P.U.G., 1998). The hills in the area have a height ranging from 325 to 425 meters, with the lowest point being 315 meters above sea level. It is worth noting that the broad ridges and

gentle slopes seldom exceed 14 -16 degrees, except for a few hills around Târgu Mureș that can be steeper, with an angle of up to 40 degrees (Konrád, 1996). This area, which is also referred to as "the gate of the Transylvanian plain" (Nagy, 2008), is a valley featuring a wooded area that exhibits a rich variety of flora and fauna. The historical evolution of the core part of the village, based on military survey and maps, is illustrated in Figure 1.

The study site is situated in a region characterized by forests and fields, and has traditionally served as a hub for regional agriculture, forestry, and hunting activities (Konrád, 1996). To this day, the area remains a valuable destination in nature, with the vibrant spring pheasant's eye (*Adonis vernalis*) blooming in the early season and the snake's head, or checkered lily (*Fritillaria meleagris*) still prevalent in certain areas, offering ample opportunities for exploration.

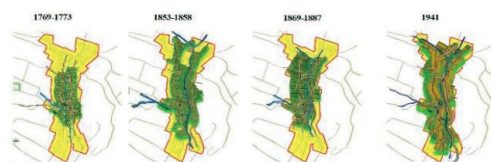


Figure 1. Urban development of the settlement Pănet (based on: Arcanum Digitheca military surveys)

RESEARCH AREA DESCRIPTION

1. Natural heritage - presentation of the proposed ecological trail's area

The educational trail is planned to be situated in Pănet, 11 kilometers away from Târgu Mureș city, a highly urban area. The distance and accessibility of the trail area from the city are optimal for a one-day excursion in nature. The area can be reached by car, bus, or even with bicycle, providing a delightful opportunity for a day out in nature, away from the crowded urban areas.

Its objective is to revive the intimate bond between humanity and nature, reminiscent of bygone times. The area's luxuriant flora and natural characteristics make the educational trail an auspicious measure for achieving this aim.

The proposed educational trail area covers a section of approximately 375 hectares in the

eastern outskirts of Pănet, representing roughly one quarter of the entire region. This area is primarily utilized for agricultural, forestry, and grazing activities, leading to the formation of an extensive network of agricultural roads. Despite significant human activity, the area retains a diverse range of flora, including numerous herbaceous plant species such as *Adonis vernalis*, commonly referred to as the spring pheasant's eye. However, certain species, such as the checkered lily (*Fritillaria meleagris*), have become increasingly rare, as research indicates. The eastern section of the area also features several old trees, including nearly century-old silver birch (*Betula pendula*) and Norway spruce (*Picea abies*) located in the churchyard. Additionally, the area boasts a white poplar (*Populus alba*) that qualifies as a "Methuselah tree" with a trunk circumference of nearly 400 cm and a height of over 20 m (Posfai, Gy., 2005). The vegetation analysis of the area reveals a diverse range of flora, which indicates that the location is suitable for an ecological trail. This finding underscores the need for further research and planning of the trail.

The visual assets in the area are not only visually appealing but also hold significant cultural and historical importance. For instance, Capele hill stands as a testament to a World War II event, while on a clear day, the summit of Becheci can be observed in the far north-east. These features, along with the hilly terrain, provide excellent panoramic views, enhancing the trail's educational value. Overall, the rich natural characteristics, high level of biodiversity, and chromatic diversity of the area make it a prime candidate for the development of an educational trail.

2. Historical heritage - presentation of the central area

Religious belief, faith have played a significant role in shaping the historical and cultural landscape of the village. The original inhabitants of the area, the Szeklers, a regional Hungarian speaking community, were initially mostly Roman Catholics, later become Reformed.

The precise construction date of the church remains unknown, although several indications suggest that it was built in the 15th century. The southern door's design bears a striking

resemblance to that of the Gornești castle nearby, built in the 15th century, leading to the inference that the same skilled stonemason crafted it. Additionally, the church's Gothic architectural style supports the hypothesis that it was constructed during this period (Konrád, 1996).

The Reformed church, built in the 1740s, served as a central point in the settlement, accompanied by a communal well located nearby. However, no other spatial design characteristics that reflect the period's style were observed in the vicinity. Old photographs indicate the presence of trees in the yard, while historical records document the plantation of an orchard, as recorded in the clerical reports. The lack of protection for the historical and heritage value of the memorial buildings in Pănet is a significant issue, given the presence of four monuments (Figure 2), including the Szekler gate constructed in 1787, located in the central area near the Reformed church (Cultural Ministry of Romania, 2015).

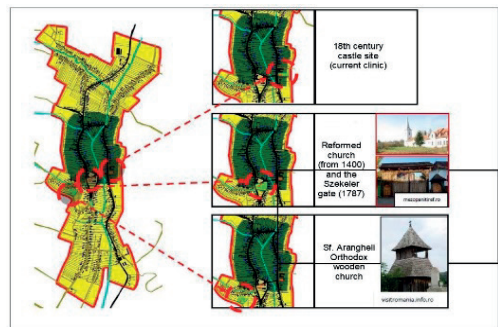


Figure 2. Monuments (according to: General urban plan of Pănet, 1998)

The church courtyard has been utilized only sporadically for religious services, lacking additional functions or frequent usage. To promote spiritual growth and maximize the utilization of the space, it has been deemed appropriate to assign a new function to the area. This decision was motivated by the ongoing expansion of the building, which represents an unprecedented event in the church's history. The memorial square, which was established in the 1990s adjacent to the Reformed church, functions as a commemorative place. Connecting this area with the church's courtyard would create a central hub, which

would symbolize the essence of religion and the village's past, while also providing a communal space for the locals.

Moreover, linking this space with the ecological learning trail would establish a connection between the present ecological approach and the church's past, thereby promoting a comprehensive understanding of the site's history and its significance in the community.

A relatively extensive green area with limited street furniture and a few trees lies in front of the Local Council building, as indicated by the P.U.G. of 1998. Although the lack of a well-defined central area in the Pănet settlement, both presently and historically, is a significant research concern, the vicinity of the church retains crucial significance within the village boundaries. It is recommended that the central area be suitably designed for leisure activities, with an emphasis on the addition of plantations, particularly woody plants and street trees along the main roads. These recommendations are in line with the guidelines of the P.U.G. (1998).

The proposed design of the central community space must prioritize a close association with the current functions of the area, specifically highlighting the religious and commemorative aspects that are connected to the church and the monument. Additionally, it should support community-building activities while preserving the educational nature of the trail. Achieving this could involve incorporating significant elements on the ecological trails route, such as the common birch (*Betula pendula*) tree located in the churchyard and the remains of the tombstone from 1866.

ANALYSIS

1. Outer area of Pănet

Pănet holds the largest administrative area among the neighboring villages, serving as the central administrative hub for the Pănet locality (refer to Figure 3).



Figure 3. Administrative areas of Pănet settlement (according to: General urban plan of Pănet, 1998)

The plan consists of two primary components, namely the expansion of the educational trail and the rejuvenation of the central community area. The former involves a section of Pănet's catchment area, which is approximately a quarter of the total, but for a more comprehensive and lucid view, it was deemed necessary to examine the entire administrative region spanning over 1,500 hectares. Figure 4 illustrates the land use and economic distribution of the analyzed areas. It is notable that the majority of the western part is primarily allocated to agriculture, extending directly from the village boundary on that side.



Figure 4. Land use distribution (according to: General urban plan of Pănet, 1998)

2. Inner area of Pănet

An in-depth analysis of the plot structure and the land use is needed in order to emphasize the coherence, harmony of the Pănet rural landscape. The lack of urban influence has allowed the traditional peasant village to persist, and its essence is reflected in the appearance of the constructed elements.

3. Analysis of the ecological trail's route

The evaluation of the area where the educational trail is planned is predicated on several crucial factors, including an investigation of the visual linkages, an assessment of the road network, and the identification of sites conducive to the proliferation of plant and animal species, as well as mature trees suitable for designated station points. The preliminary analysis is underpinned by these fundamental parameters, and supplementary inquiries may be incorporated to precisely demarcate the ultimate outcome.

The survey of the road network (Figure 5) in the specified area indicates that all sections of the area are reachable via unpaved roads. ORANGE arrows indicate access from the village, whereas RED arrows denote access from roads outside the village, mainly field roads.



Figure 5. Road network and accessibility (according to: General urban plan of Pánet, 1998)

After studying the distribution ratio of forested and cleared parts in the hilly region, can be evaluated the visual connections of the area. The analysis of visual connections helped in the identification of key points that require establishing connections along the educational trail, while also highlighted areas that may not be relevant from this standpoint.

The analysis of vegetation is a crucial aspect of the educational trail, and thus, particular attention was given to its evaluation. The natural conditions of the area have allowed, facilitated not only the survival, but further development of a spontaneous flora, which renders the place extraordinary, aesthetically pleasing, and intriguing. The distribution of forest and field wood vegetation is presented in Figure 6, revealing that the dominant tree species in the vast forested area is pedunculated oak (*Quercus robur*), often accompanied by hornbeam (*Carpinus betulus*). As the area is located on a hillside, thickets, mainly consisting of single-seed hawthorn (*Crataegus monogyna*) and cornelian cherry (*Cornus mas*), bind the soil on the slopes. Vines are less prominent, whereas woody pastures are found on the hillsides and edges of clearings, where the wild pear (*Pyrus pyraster*) frequently appears. Although white poplar (*Populus alba*), common walnut (*Juglans regia*), and European black pine (*Pinus nigra*) are present in the area, they are scarce and dispersed.

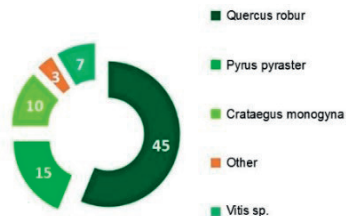


Figure 6. Existing tree species proportion on the ecological trail's area

Regarding herbaceous plants, the environment becomes picturesque, as they usually cover a given area and enhance the human-nature relationship of the settlers. The spring pheasant's eye (*Adonis vernalis*) is particularly noteworthy as it blooms abundantly in the spring, forming a stand on an entire hillside in the northern part of the area, along with the red winter rose (*Helleborus purpurascens*). The forest sites of dogtooth violet (*Erythronium dens-canis*) appear almost everywhere, while in the flatter areas, cowslip (*Primula veris*) form an abundant population.

These plants can be an intriguing focus for the primary segment of a station, not only because of their aesthetic appeal but also due to their potential medicinal properties. Additionally, the broad-leaved Solomon's seal (*Polygonatum latifolium*), greater stitchwort (*Stellaria holostea*), early dog-violet (*Viola reichenbachiana*), *Veronica sp.*, the purple gromwell (*Lithospermum purpureo-ceruleum*), common wormwood (*Artemisia absinthium*), and snowdrop (*Galanthus nivalis*) form dense and large stands, while the checkered lily (*Fritillaria meleagris*), found in only one place, and the greater pasque flower (*Pulsatilla grandis*), found on a few square meters of a hillside in the southern part of the area, are the rarest plants in the surroundings of the settlement (Soó & Kárpáti, 1968). These plants need proper protection (Figure 7).



Figure 7. Herbaceous plants

Various species of butterflies can be observed in the area, including the *Papilio machaon*, *Inachis io*, and *Iphiklides podalaria*. The bird fauna includes *Phylloscopus collybita*, *Turdus merula*, *Parus major*, *Dendrocopus major*, and

Fringilla coelebs. Notably, a nesting site of *Bubo scandiacus*, commonly known as the snowy owl, can be found along the educational trail (Kelemen, 1978), making it a significant spot for bird enthusiasts.

The western part of the area mainly consists of agricultural fields, which may not be the ideal location for a pleasant walk. Against this, the eastern region is an exceptional exhibit of biodiversity and serves as a natural ecological museum. Thus, it is expected that this area will be the primary educational focus of the trail, providing a captivating and informative learning experience. Therefore, the analysis results support the decision to exclude the western hill section and focus on planning the eastern portion instead.

3. Analysis of the central area - Churchyard

As observed in the analysis of the area, the functions are distributed without coherence between them. The secondary road, which intersects the two spaces, appears redundant due to its rare usage. Based on traffic analysis, the elimination of motorized traffic from streets can create a coherent connection between the space and functions. By implementing modifications and removing trees, a structural configuration and sense of space can be established, with axes being introduced. In summary, it is imperative to tackle the primary issue of the road section that separates the two areas.

The concepts of memorial square and church can be intertwined, resulting in a community-oriented space that fosters a sense of history and devotion. Furthermore, it may be necessary to prohibit parking in the proximity of the square during church services to prevent congestion caused by parked cars.

Promoting tourism is a favorable opportunity for the settlement, considering its abundant vegetation, natural attractions, and historical monuments, landmarks.

CONCEPT

The scheduling of the plan will follow a similar approach to the analyses, proceeding from larger to smaller scales. Firstly, the concept for the educational trail will be discussed, followed by the plan for the churchyard.

The design of the ecological learning trail will be based on the analyzed principles. This involves mapping the key points discovered during the research, including old trees, flora and fauna, rest areas, and lookout points, and categorizing them accordingly. The second component will consist of a network of nature trails based on these categories, which will be constructed by extending existing field roads or by adding partial extensions to them (Figure 8).

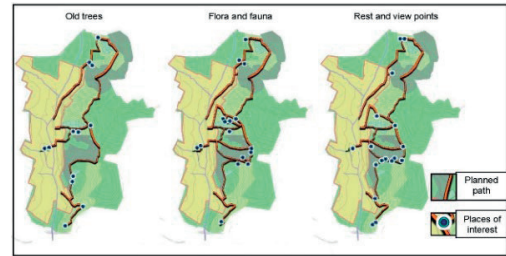


Figure 8. The concept of the ecological trail (according to: General urban plan of Pănet, 1998)

The organizational concept for the churchyard and central part of the site is based on the principles of site planning, which involve creating a cohesive plan that organizes the site according to the structure of its included axes and built elements. The concept will be based on three primary axes, as illustrated in Figure 9. The plan aims to preserve and expand upon the basic functions of the old yard and its surroundings while reflecting the principles formulated in the analyses, such as maintaining a traditional character and serving as the center of community life.

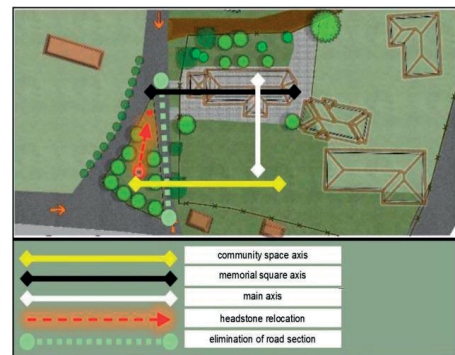


Figure 9. The concept of central area

PILOT PROJECT, INTERVENTIONS

1. Ecological educational trail

In the ecological learning trail, the identified points are categorized and mapped to establish a network of the ecological nature trail. Following the elimination of any overlaps, the resultant trail is approximately 2 kilometers in length, consisting of a primary circuit route complemented by two optional, more challenging sections (Figure 10). These sections comprise steep inclines and incorporate two stations inaccessible via any other route. The ultimate trail consists of a total of twenty-one (21) stations.

The recommended starting point for the ecological learning trail's planned area unit is at the northernmost point. However, in the absence of a designated guide, hikers can also begin at two other points. One of these points originates from the churchyard, and the hiker would enter the middle section of the trail. In the southern part, the hike would commence with a steep incline, leading to the first station

after a relatively long climb. These two road extensions are included because they intersect with two bus stops and two cafes, where hikers can take a rest during a specific section of the trail. Upon returning to the starting point, hikers will encounter a vertical information board displaying the road network of the educational trail, its difficulty level, and general information about the nearest station points and noteworthy features. The board's style adheres to tradition and features a motif that appears in some part of all furniture types included in the plan, thus creating a cohesive look for the learning trail and the central space separately. The visual aspect is prioritized, and a specially designed lookout point will be constructed at the viewpoint areas. The ecological learning trail is designed to blend in with the natural environment, requiring minimal landscaping. Rest areas are available at each station, with log benches that comfortably accommodate two people, providing an immersive nature experience.

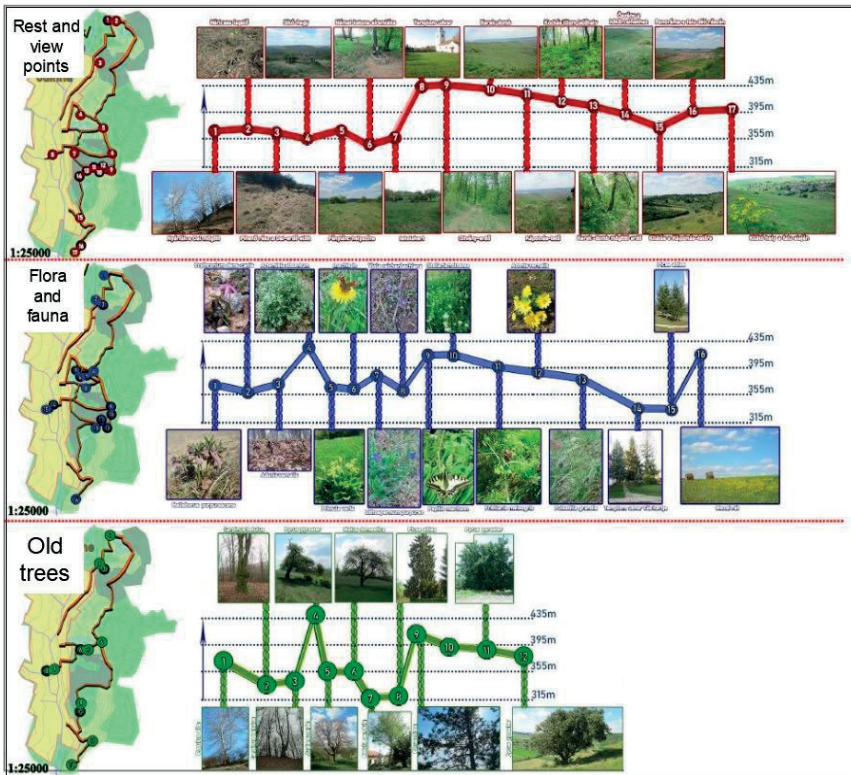


Figure 10. Masterplan and section of the proposed ecological trail (according to: General urban plan of Pănet, 1998)

The stations dedicated to rare and characteristic plant sites were developed with strict parameters to minimize trampling and contact with the plants. It is crucial to preserve the existing vegetation and minimize human impact on the natural ecosystem. Thus, it is not recommended to introduce new plants into the area of the ecological learning trail.

2. Historical perspective, the churchyard

The churchyard represents a unique planning program that is closely tied to the ecological trail. This connection is not only evident in its role as a station but also in its furniture and built elements. The underlying organizational principle aims to establish three functionally distinct axes that can merge to create a coherent and integrated entirety.



Figure 11. Perspectives from the proposed churchyard design

The planned area units of the churchyard aim to integrate the memorial square and the church yard by removing an underutilized section of the road and expanding the green area. As a result, the surface area will increase, which remains functional while being separated by the church's fence. The newly constructed Szekeler gate, previously without a clear purpose, will function as an entrance from the public square to the churchyard, making effective use of its design.

Six (6) *Quercus robur*, commonly known as oak trees, were deliberately planted in a row to offer uninterrupted vistas of the church from the western and southern approaches (Figure 11). This tree species is indigenous to the local countryside, thus representing the natural environment and ethos of the ecological learning trail.

The surface material used in the pedestrian areas surrounding the church and public square consists of precisely cut granite cubes with dimensions of 5 x 5 x 5 cm. The same split stone material is used for the detour path that

passes through the pergola, creating a consistent visual appearance throughout the area.

The proposed vegetation design exclusively incorporates hygrophyte plants due to the elevated groundwater level in the area. The following Table 1 list the species along with their respective codes and quantities.

Table 1. Proposed vegetation

ID	Scientific name	Common name	Quantity
1	<i>Quercus robur</i>	pendunculate oak	6
2	<i>Cornus sanguinea</i>	dogwood	7
3	<i>Spiraea x vanhouttei</i>	bridalwreath	20
4	<i>Crataegus laevigata</i>	woodland hawthorn	6
5	<i>Prunus domestica</i> 'Stanley'	European plum	3
6	<i>Prunus domestica</i> 'Ruth Gerstetter'	European plum	2

CONCLUSIONS

The educational trail highlights the values of the past and presents them in a modern way that can be approached from multiple perspectives. It establishes a symbolic linkage that connects the present natural areas with the past central areas and the church, thereby bridging the gap between the two temporal domains.

The plan incorporates goals and principles that reflect the village's image, traditions, and modern spatial structure. The modern spatial structure complements rather than subjugates these values.

The ecological learning trail presents a valuable opportunity to showcase the wonders of nature in an engaging and informative way. A walking time of approximately 2 hours, including rest and lookout areas, is optimal for a fulfilling experience.

The plan was developed with a deep appreciation for nature, avoiding any attempt to subjugate it. Considerations such as appropriate paving materials, road network design, information board size, and furniture shape all contribute to a sense of connection with nature. This educational tool is expected to enable hikers to form a deeper connection with nature, appreciating its beauty and precious mystery, and developing a sense of responsibility to protect it.

The central part of the village serves as the anchor point for the planning design, with faith, community, and memory being the fundamental pillars of the society. The plan effectively integrates these pillars by creating communal green space, the churchyard, and the pergola, which encourage reflection, as well as the monument, all of which are integral elements of the village's identity. Additionally, due to the strategic placement of one of the educational trail's stations, the plan creates a cohesive and valuable unity for Pănet.

Ecotourism can provide "close-to-nature" areas for both residents and visitors, offering opportunities for recreation and relaxation, which are increasingly important in the context of expanding cities and overcrowding. As people's demand and need for such areas continue to grow, ecotourism can play a crucial role in meeting these needs while also promoting sustainable practices and preserving natural environments.

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