Evaluation of a continuing education programme on socially responsible architecture

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ABSTRACT: The research presented in this article aimed at evaluating the effectiveness of the educational module *Design of the built environment in the process of deinstitutionalisation* offered at an architectural school in Slovakia. The module is accredited and was selected form a programme including seven modules. The research was carried out in two phases. In the first phase, the formative evaluation was aimed at verifying the effectiveness of education during the ongoing educational process and immediately after its completion through interviews, observations and questionnaires. In the second phase, the summative assessment was aimed at verifying the ability of graduates to apply the acquired knowledge in practice, with data collection in the form of delivered outputs: 1) text documents *Transformation plans*; and 2) graphic outputs *Architectural and construction materials*. The collected data were analysed to verify the effectiveness of the educational programme and evaluated at intervals of one to three years after the end of the education. The published research results were the basis for modifying the curriculum of the selected accredited educational module.

Keywords: Architecture, continuing education, universal design, social services

INTRODUCTION

Trends in the social services sector are currently changing mainly due to the rapid aging of the population and the obligation to respect human rights and address individual needs of all people. In Slovakia, the continuous professional development of employees working in the social services sector is mainly aimed at the implementation of the national strategy of deinstitutionalisation of the system of social services and substitute care (out-of-home placement) in order to provide recipients with *…a system of high-quality alternative public services to enable them to live independently with the support of the community (experts, family members, volunteers)* [1].

The gradually introduced changes are largely related to the fulfilment of the UN Convention on the Rights of Persons with Disabilities [2] and concern several areas of social services. For example, there are changes in the assessment of the degree of dependency on social services and in the system of financing social services; a greater emphasis is placed on the quality of human-oriented services and the related accessibility of the built environment of public spaces and buildings for all according to universal design.

Due to inaccessible buildings and difficulties in moving between buildings in public places, users with disabilities are disadvantaged and faced with barriers which prevent their inclusion [3][4]. The process of deinstitutionalisation is a very demanding and long-term process that *…requires sufficient and well-trained staff with skills appropriate for community-based care as well as adequate built environment* [5] that is inclusive.

This article includes partial results of the evaluation of the effectiveness of the interdisciplinary continuing education programme (CEP) offered by the Faculty of Architecture and Design at Slovak University of Technology in Bratislava, Slovakia. The CEP comprises a package of seven accredited modules (Figure 1), one of which is the focus of this article. The aims of the selected accredited module *Design of built environment in deinstitutionalisation process* (CEP module) is to provide basic knowledge about the architectural design that meets predefined quality criteria for the provision of social services.

More specifically, the selected CEP module is aimed at providing quality community-based social services, which were implemented in the years 2018-2023 as part of the Slovak national project: *Deinstitutionalisation of social care facilities - support of transformation teams* (deinstitutionalisation project).

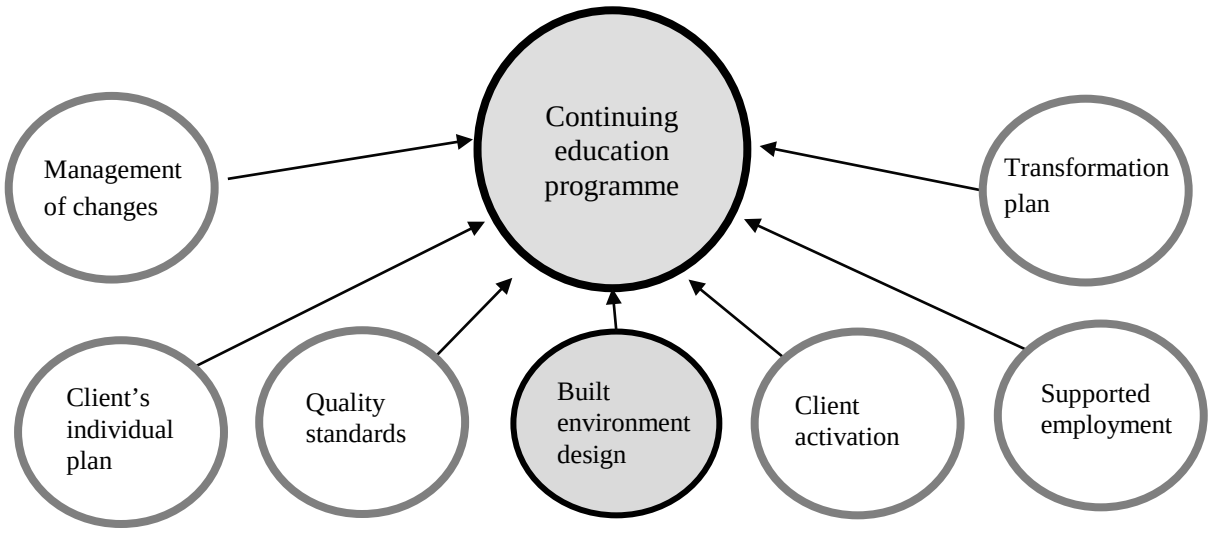

Figure 1: Areas of interdisciplinary focus of the seven modules of the continuing educational programme (CEP).

The preparation of the selected CEP module focused on the design of the built environment was based on the requirements of the Convention on the Rights of Persons with Disabilities, especially Article 19 - Living Independently and Being Included in the Community [2]. Architects and social work experts collaborated in the development of the syllabus and jointly defined standards for the quality of the built environment, which are related to the criteria of deinstitutionalisation [6], to the quality criteria of social services defined in the Slovak legislation, and also to the principles of human-centred design, universal design [7] or salutogenic design [8][9].

The target group of the CEP module was heterogeneous. In addition to selected employees from 92 participating social service facilities in the deinstitutionalisation project, the training was also open to local government employees from investment departments and project departments, whose task was to transfer acquired knowledge directly into practice.

The aim of the CEP module was to link theoretical knowledge oriented to the design of the built environment with real tasks and experiences of participants with different educational and professional backgrounds in a simple and comprehensible form. Specific topics had a different focus, for example, monitoring the accessibility of the built environment in order to integrate recipients of social services into the community, universal design of community-based care objects, adaptable and healthy architecture, apartment modifications for the purpose of providing care and according to the individual requirements of the recipients, intelligent assistance technologies, preparation of investment intentions, etc.

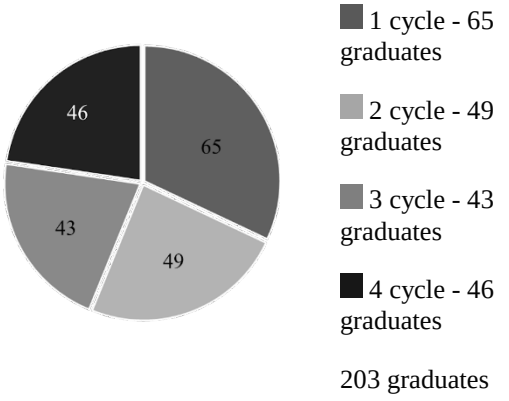

Figure 2: The number of graduates of the *Designing the Built Environment* module in four cycles.

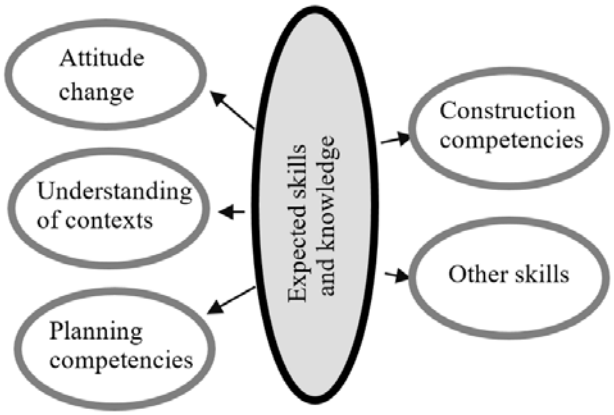

Figure 3: Expected skills and knowledge of graduates from the *Design of Built Environment* module.

RESEARCH GOALS

The CEP module was carried out during the years 2018-2023 in four education cycles (Figure 2). The aim of the research was to assess the effectiveness of the transfer of theoretical knowledge into practice using several research methods and to use obtained results in the creation of an improved new educational programme with a similar focus for a similar target group. The research was based on the hypothesis that graduates of the CEP module would acquire enough knowledge to have sufficient skills needed in the creation or control of the built environment in the process of transformation of the social services system in particular (Figure 3):

1) Attitude change - understanding the process of deinstitutionalisation and transformation of social services.
2) Understanding of contexts - being able to define diverse user requirements for the built environment according to legal regulations or international treaties; the most important skill is not just solving a problem but being able to identify it.
3) Planning competencies - being able to prepare a transformation plan of a social services facility, particularly the *Design of the Built Environment* chapter.
4) Construction competencies - being able to prepare functional and operational requirements for community-based care buildings of both outpatient and residential types, to be applied in construction investment projects.
5) Other skills, such as knowledge of environmental measures or the use of smart technologies.

RESEARCH METHODS

The research aimed at the effectiveness of education was carried out in two phases, using formative and summative evaluation to get feedback from the participants of the educational programme, but also to check whether they were able to apply the acquired knowledge in practice.

The 1st phase of the research - formative evaluation was aimed at verifying the effectiveness of education during the ongoing educational process and after its completion. The following research methods were used to collect data a) interviews; b) observation; and c) questionnaires. The target group was 203 graduates of the CEP educational module who received a certificate. It should be added that each of the 92 facilities involved in the deinstitutionalisation project had at least one graduate of the educational module.

Interviews with the participants and observations of the lecturers took place continuously during the education. The objective was to verify whether the participants of the CEP module understood the sub-topics and topic areas, but also to observe the reactions of the participants, for example, whether they were interested in the topic, whether they joined the discussion, which information was stimulating and interesting for them and which were considered less important.

During the evaluation, the answers and reactions of the participants were evaluated by the degree of satisfaction: average - good - very good. The obtained data were subsequently used as a basis for making minor adjustments during education, for example changing the teaching method, changing the lecturer or including other practical examples from practice.

In the 2nd phase of the research a summative assessment was aimed at verifying the ability of graduates to apply the acquired knowledge of the CEP module in practice. The target group comprised employees from 92 facilities involved in the deinstitutionalisation project, while each of the 92 facilities had at least one graduate of the CEP module. In this phase, a qualitative evaluation of the outputs was carried out, in the preparation of which the graduates of the CEP module participated.

Data were collected from the assessed outputs, followed by: a) analysis of the *Transformation Plan* aimed at changes in the provision of quality and community services; and b) analysis of architectural and construction documents, where functional and operational requirements of social care buildings were examined for correct application. The following rating scale was used: projects approved - projects approved after completion - projects rejected.

In the textual document Transformation Plan, the content of the chapter *Design of the Built Environment* was evaluated for compliance with predefined criteria of deinstitutionalisation [6], with the quality criteria of social services defined in the legislation, but also with the principles of human-centred design, universal design [7] or salutogenic design [8][9].

A total of 92 transformation plans were assessed. In the project documentation of the buildings, the functional and operational requirements setting was evaluated in terms of characteristics of the envisioned spaces, such as ambiance, accessibility, adaptability, etc, in accordance with the goals of the completed education. Fifty-nine investment projects (architectural and construction documents) were included in the evaluation, of which eight projects were submitted by participating facilities that completed the CEP module training.

RESULTS - 1. RESEARCH PHASE

The conducted interviews and observations proved the fact that the participants had relatively large differences of opinion. For example, 88% of the participants declared that they understood the sub-topic curriculum very well or well, but 12% of the participants had problems understanding some part of the curriculum (Figure 4).

A similar result was also achieved with questions related to verbal expression, where 85% of the participants rated the speech as very good or good, 15% rated it as average. Deficiencies in interactivity were identified by 35% of the participants, which is a rather unfavourable result. The level of educational materials was rated best, where everyone answered that the level was good or very good. As part of the discussion on the content of the training, various suggestions were received, for example, that certain changes were necessary, especially in the area of substantial argumentation and time schedule efficiency (Figure 5).

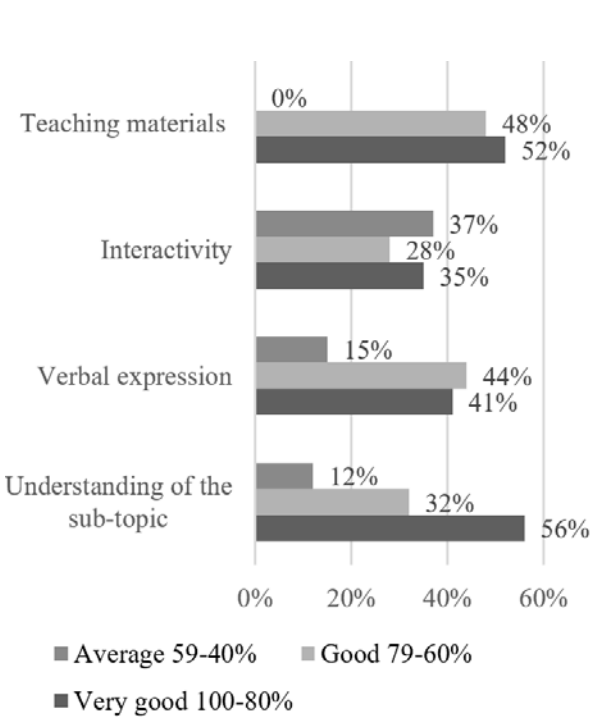

Figure 4: Evaluation of the quality of various CEP module teaching methods.

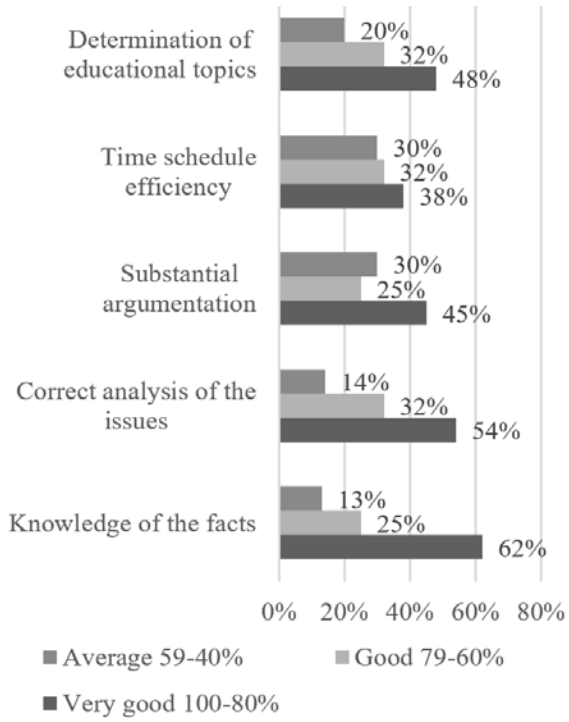

Figure 5: Evaluation of educational courses in terms of the offered content.

In the first feedback questionnaire, five closed questions and one open question were evaluated. After the end of the second cycle, two more questions were added to the questionnaire, related to satisfaction with the discussion and whether the course met the expectations of the participants. The responses were evaluated and compared with the interviews and observations. In this questionnaire, compared to the reactions of the participants during the interviews, a better result was achieved in the area of the quality and level of the lecturers, as well as in the area of interactivity. Ninety-four point sixty-one percent of the participants expressed great satisfaction with the content of the educational activities, and 93.75% were very satisfied with the course of the discussion.

The data obtained from the questionnaire demonstrated the high overall effectiveness of the CEP module education (Figure 6). However, 18% of the participants doubted whether they would use the acquired knowledge in practice, which may also be related to the heterogeneous group of participants with different professional orientations. In the open question, most of the participants had no suggestions for improvement, but some of them recommended that more samples of realised buildings should be presented in the form of photos, films or excursions. From the presented drawings of the proposed buildings, despite the presented visualisations of the buildings, some participants did not have enough experience because they could not imagine them well.

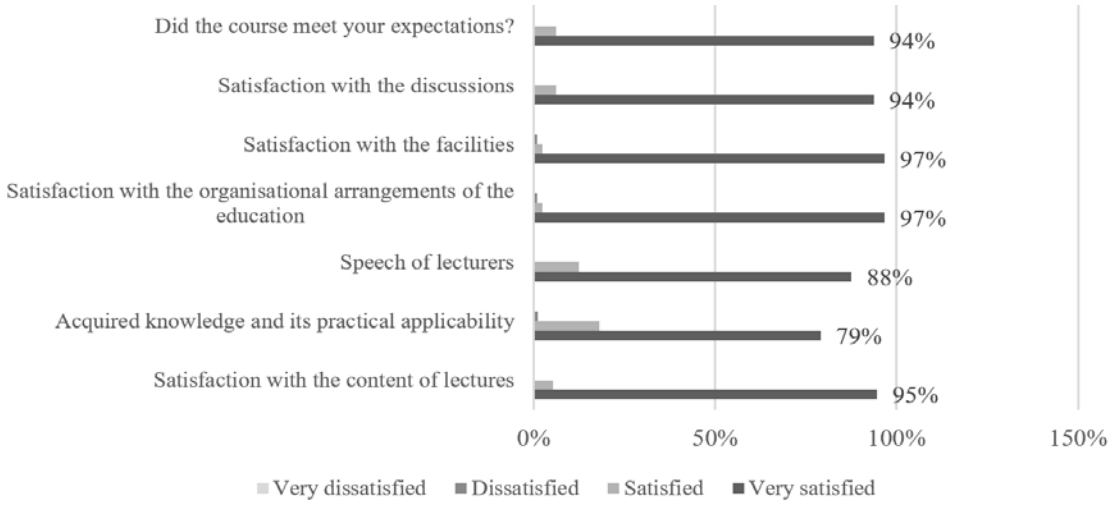

Figure 6: Evaluation of the CEP module in terms of the offered content and organisation of the courses.

The second questionnaire was sent electronically one to three years after the end of the CEP module and had a return rate of 72.83%. The evaluation of the questionnaire showed the degree of satisfaction with the individual activities of the completed deinstitutionalisation project (Figure 7), while the educational activities of the CEP modules were evaluated as the most beneficial. For example, the answers show an assessment of the level of employees' attitudes towards the implemented changes (Figure 8). Here, the assumption that changing employees' attitudes requires a longer time was confirmed.

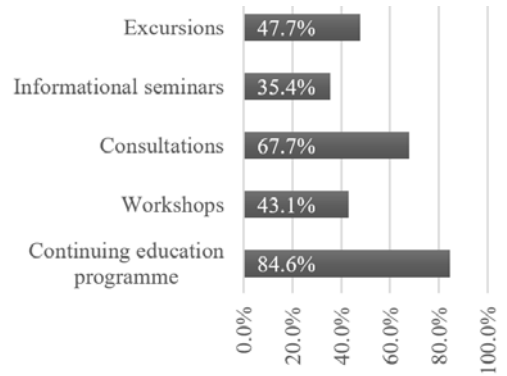

Figure 7: Degree of satisfaction with the individual activities of the completed deinstitutionalisation project.

Figure 8: Level of employees' attitudes towards the implemented changes.

RESULTS - 2. RESEARCH PHASE

When evaluating the outputs in the text document Transformation Plan, the application of the acquired knowledge was evaluated for correctness, especially in the *Design of the Built Environment* chapter. The evaluation results were very satisfactory with a high degree of feasibility, but the result could have been influenced by the fact that, in addition to the graduates of the CEP module, expert consultants also collaborated in the creation of the Transformation Plan (Figure 9).

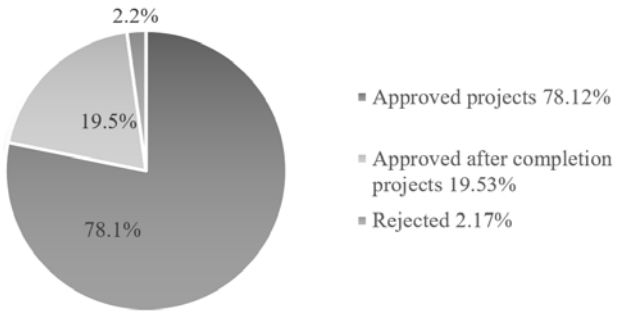

Figure 9: Evaluation of the application of acquired knowledge from the CEP module in the 92 transformation plans.

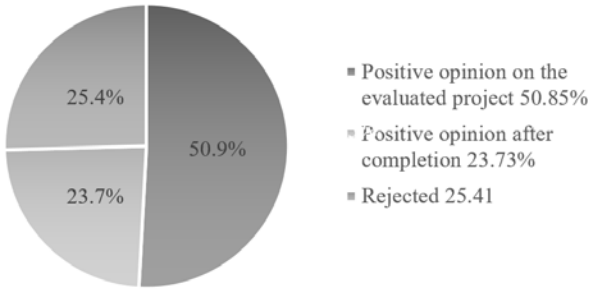

Figure 10: Evaluation of the application of the acquired knowledge from the CEP module in the 59 investment projects.

The evaluators marked 72 transformation plans positively because they met the set conditions completely, 18 transformation plans were accepted with comments, that is, they met the conditions partially, and two transformation plans were rejected because they did not meet the conditions. Already at this stage, the success of processing outputs was at the level of 72.26% for the *Design of the Built Environment* chapter. During the evaluation of the 59 investment projects, 30 of them fully met the conditions and were therefore recommended for implementation, 14 of them met the conditions only after completing the missing information, and 15 were rejected due to non-fulfilment of the conditions, which comprises up to 25.41% (Figure 10). The reason for the rejection includes errors in the layout or construction solution, which would not allow simple changes to be made to meet the set evaluation criteria (Figure 11).

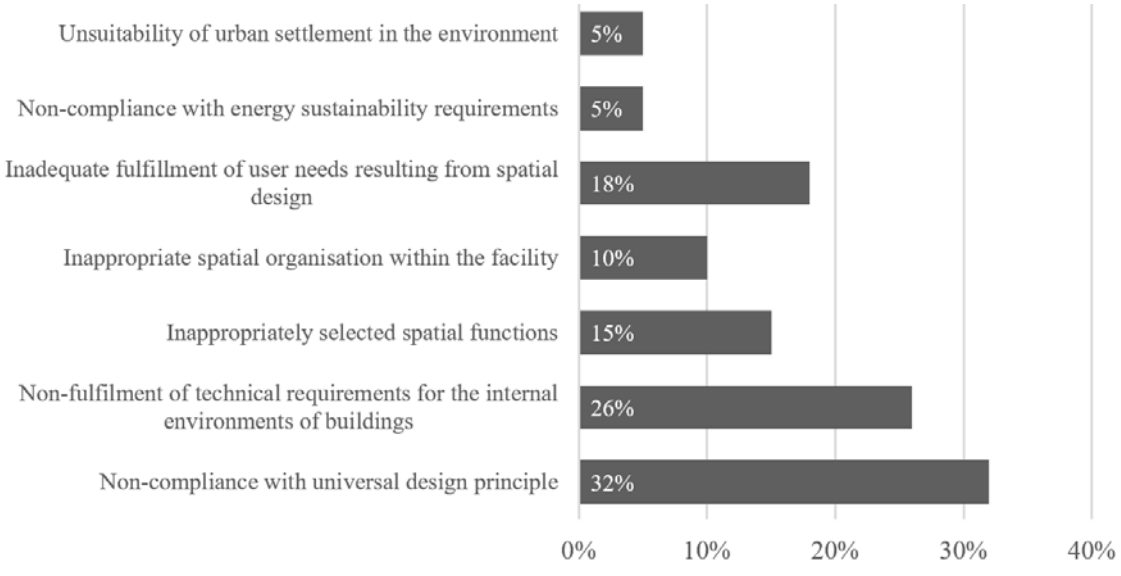

Figure 11: The most frequent reasons for a negative assessment of investment projects.

DISCUSSION

The first phase of the research focused on the formative assessment of the CEP educational module took place directly during the training course through interviews, observations and questionnaires. The interviews delineated opinions regarding the presentation quality and content of individual sub-themes in the final assessment. Positive evaluations were given for the lecturer's performance in terms of presentation style and provided educational materials. The lowest-rated aspect was the level of interactivity during the presentation of the material, with 37% of the participants rating it as average. It is necessary to significantly improve this aspect of education when preparing a new educational module.

Another important finding was related to the distance learning format, which courses had to adopt during the COVID-19 pandemic. For instance, graduates considered the on-line environment less conducive to discussion. This is confirmed by other scientific studies, which emphasise that …*students using online courses perceive a lack of interaction* [10][11]. However, in comparison to in-person learning, distance education provided greater flexibility for employees as they did not have to travel for training. Based on these findings, it would be advisable to implement hybrid forms of education in the future, combining both in-person and on-line learning. Regarding the educational content, the research demonstrated the need for more practical exercises with a higher degree of interactivity.

When evaluating the results of the immediate feedback questionnaire, a significant improvement in participants' attitudes towards interdisciplinary education was observed. The differences compared to the results from interviews are statistically significant, which may partly be explained by the fact that participants begin the course with apprehension about the unknown, leaving greater room for improvement. On the other hand, the exchange of some lecturers, the organisation of workshops, and the lightening of lecture cycles with embedded practical exercises made the form of education more attractive and unequivocally increased the ability to absorb interdisciplinary information. The content of the exercises focused on linking theoretical content with practical examples.

The collected data necessary to verify the effectiveness of education and to gather inputs for subsequent innovation of the educational programme, which occurred in the second phase of the research, was evaluated with a time lag of one to three years after the completion of education. The evaluation of transformation plans for social service facilities and investment project assessments, where graduates of the CEP education module collaborated on the final reports, demonstrated a high percentage of success in outputs related to meeting criteria for the creation of physical environments. Based on identified problematic areas in the evaluation of outputs in transformation plans and identified reasons for negative assessments in investment project evaluations, it was subsequently possible to determine key issues and areas to focus on in the innovation of the educational course.

CONCLUSIONS AND SUGGESTIONS FOR IMPROVEMENTS AND FUTURE DEVELOPMENTS

Based on the research results, it can be stated that graduates evaluated the accredited education within the CEP module focused on the design of the built environment positively, and the verification of the application of the acquired knowledge in practice was excellent. In the innovated educational module, there is no need to make significant changes in the content of education. However, based on the recommendations of the graduates, the following measures should be adopted:

- Pay greater attention on workshops, particularly on their focus.
- Increase interactivity in teaching, involving individuals in discussions and activities.
- Organise a greater number of visits to positive real-life examples from practice.
- Introduce specific consultations based on selected thematic areas.
- Provide space for professional consultations on transformation plans, planned investment projects, as well as construction modifications of existing facilities and their surrounding areas in line with the defined quality criteria.

More intensive consultations can help apply theoretical knowledge to real projects [12]. Architectural education and the profession deal with engineering matters, but also with the rights of citizens [13]. The level of education obtained can have a significant impact on improving the lives of recipients of social services, as well as on compliance with human rights in accordance with the Convention on the Rights of Persons with Disabilities, especially Article 19 - Living Independently and Being Included in the Community [2]. Quality community services supported by educated personnel in a quality and inclusive built environment are the best way to achieve independent living for recipients of social services.

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BIOGRAPHIES

Lea Rollová is the Head of the Centre of Design for All (CEDA), which is based in the Faculty of Architecture and Design at Slovak University of Technology in Bratislava, Slovakia. In her research, teaching and publication work, she focuses on social sustainability and universal design. Lea devotes her efforts to improving the situation of people with disabilities in Slovakia. She is the author, co-author and editor of many scientific and popularisation articles, books and textbooks. She is a member of various organisations and working groups, such as the international organisation EIDD - Design for All Europe, a member of the evaluation jury of the Access City Award (competition of the European Commission), a member of the expert group for the preparation of national building legislation, to name a few.

Danica Končeková successfully graduated from the Faculty of Architecture at Slovak University of Technology in Bratislava (STU), Slovakia, in 1995. Following her graduation, she pursued her PhD studies at the same Faculty, completing her degree in 2001. Presently, she holds the position of an Associate Professor in the Faculty of Architecture and Design at the STU. She actively contributes to the Centre of Design for All (CEDA) and serves as a lecturer and supervisor for courses, such as Design Studios, Universal Design, and Public Buildings. Her expertise lies in the design of modern, safe, and inclusive educational environments, age-friendly spaces, social care facilities, and other public buildings. Additionally, she is recognised as a national expert and evaluator of physical environment accessibility and is affiliated with the EIDD - Design for All Europe organisation.

Zuzana Tóthová graduated from the Faculty of Architecture at Slovak University of Technology in Bratislava (STU), Slovakia, in 1989. She completed her PhD in 2005 in the same Faculty. Currently, she is an Associate Professor in the Faculty of Architecture and Design at the STU. Her main activities and responsibilities include being a lecturer and supervisor of the subjects, such as Design Studios, Social Forms of Housing, Fundamentals of Architectural Design and Praxis. She is engaged in research projects, publishing activities and consulting, evaluative and advisory activities of physical environment accessibility, all with an emphasis on universal design of the environment.