Erasmus+

MODEL FOR REPURPOSING OF EDUCATIONAL BUILDINGS AND SPACES FOR HE INSTITUTIONS

LITERATURE REVIEW ON PARTICIPATORY PRACTICES IN DESIGN OF LEARNING ENVIRONMENTS

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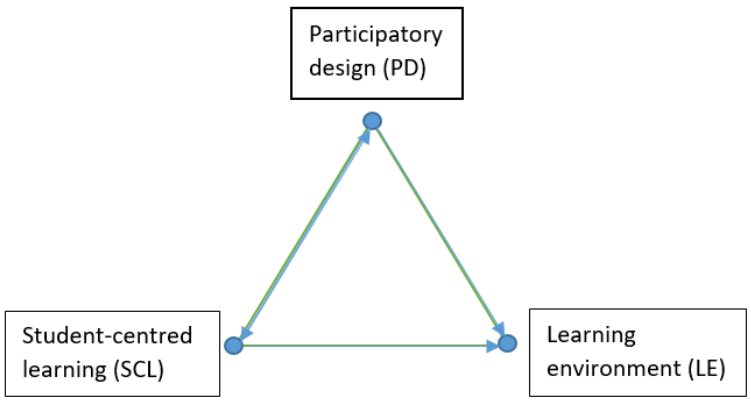
1. Introduction

In the project CREST (Creative Repurposing of Educational Spaces for Innovative Student-centred Environments), one of the outputs is also a literature review in the field of participatory practices, concerning learning environments in the educational institutions, preferably universities, with the focus on student-centred learning. Our research is taking place in the triangle where the corners are set by student-centred learning (SCL), participatory design (PD) and learning environment (LE).

While student-centred learning was widely discussed in the IO1, we will only briefly introduce it here. We will discuss the notion of participatory design in relation to citizen participation, and the notion of learning environment. Since we aim at repurposing of the learning environment at the higher education institutions, we will include some successful examples, found in the literature.

Figure 1: The literature review triangle



According to some considerations, »learning environment refers to the diverse physical locations, contexts, and cultures in which students learn",[1] this is the reason, the term often refers to non-traditional learning environments. It can further refer to the culture of the class and the school, and also the way how the school life is organized. It can also include the factors outside the education institution, which also influence it. The term can also address the way in which the relationships among students themselves and with the teachers evolve. In our literature review, we are using the term by referring to the classroom and other spaces in the education institution.[2] The term learning environment is convenient for two reasons: it connotes all the other meanings explained above and it can encompass all the variants of the brick-and-mortar education spaces. Lastly, we are experiencing an increasing use of the word 'virtual' or 'online' in front of the terms once denoting such places. This is the evidence that the process goes on also on the other side and the learning environment as a term is effective bridging the gap between tradition and future.

Learning environment is in our case highly influenced by the practices of student-centred learning and participatory practices. We can learn from the processes in the past, especially in the 70s, when participatory design, open-plan schools and the pedagogy behind were introduced. Both movements came to a halt in the 1980s but gained momentum in the last two decades.

In the first chapter, the notions of citizen participation, participatory design, student-centred learning and learning environment will be discussed. In the chapter 2, citizen participation and

[1] Great Schools Partnership. (n.d.). Learning environment. In The Glossary of Education Reform. Retrieved June 2022, from https://www.edglossary.org/learning-environment

[2] Learning environment. (2013) The Glossary of Education Reform. https://www.edglossary.org/learning-environment/

diverse models will be discussed. The seminal work of Arnstein (1969) and her ladder of participation shows, together with Burke's problem-oriented model (1968), state of the art in the 1960s. Callahan with role-oriented model (2007) and Lundy model of child participation (2007) show us the more recent and up-to-date developmental stage. In the second part, we will present some other features of citizen participation – planning, mechanisms/techniques, virtual participation. In chapter 3, we will follow the studies, dealing with participatory design while (re)designing build learning environments. Some striking examples are presented. We will amend the studies by those from the higher education sector and without participatory design to show some other features of redesign. We will conclude with short discussion in chapter 4.

1.1 Participatory design and citizen participation

In our literature review, we are dealing with two concepts, which are much related: citizen participation and participatory design (PD). H. S. Baum, in International Encyclopedia of the Social and Behavioral Sciences, defines citizen participation as "citizen involvement in public decision-making. In different interpretations, 'citizens' may be either individuals or organized communities, and 'participation' may involve either observation or power." This reflects mainly the efforts of involving citizens who aren't active in the governmental processes, but the citizens may be organised as well. The fields of citizen participation are usually community development, social planning and social action. (Baum, 2015). We see that citizen participation aims at topics very crucial for the local community or society.

This is not the case with participatory design, which aims at much smaller communities or groups, often called users or even clients. Participatory design (PD) is "an approach to design that invites all stakeholders (e.g. customers, employees, partners, citizens, consumers) into

the design process as a means of better understanding, meeting, and sometimes preempting their needs." (Elizarova and Dowd, 2017). Participatory design aims at user participation in design for work practice. It is a democratic process for social and technological design of systems involving human work. The underlying argument is that users should be involved in designs, as they will use them. All stakeholders, with the users in forefront, have equal input into interaction design. (Müller and Kuhn, 1993)

Both concepts share the wish to include the most numerous group of stakeholders, often neglected or not properly included. They strive for democratic approach, transparency, and empowerment. They usually force the most powerful party to abolish its authoritarian position in order to secure better outcomes for the whole community/society. Many lessons derived from citizen participation can be used in participatory design and vice versa. Mechanisms, put in practice in both approaches, are often interchangeable. However, citizen participation often deals with governance and distribution of resources, participatory design usually isn't that far reaching, although it can be used also in that way.

What our project aims at are practices of redesign of learning environments with inclusion of especially the largest group of users, ie. students. The redesign of built learning environments usually means changes in social and technological sense, both affecting the pedagogy used in the new learning environment. This process wants to be democratical and sensible to the needs of students; we want them to be active and participate in the decision-making, which affects them as well as those coming after them.

The realm citizen participation offers numerous models and one of the earliest and most influential is the ladder model by Arnstein (1969), a ladder of participation where she equates the level of citizen participation with the steps on a ladder. In the following, there will be several models of citizen participation presented, depending on the main axis address by them

(citizen power, stakeholders' roles, problems addressed, approach to the issue, mode of communication, representation, aim of participation…). There will be authors like Burke (1968), Callahan (2007), Bobbio (2018); later on, Hart's ladder will be also mentioned (Hart, 1992). Lundy's model shows a very interesting approach, dealing with enactment of the Article 12 of the Convention of the Rights of the Child, where a direct link between citizen participation and participatory design occurs (Lundy, 2007). There are several other models, not discussed in detail: Thomas's theory relies on the Arnstein's ladder of participation, where he recognizes five levels of civic participation, and that public administration decides which and how many levels to allow this type of participation. Another author is Timney, who recognizes three types of direct participation: active, passive and transitional. (Callahan, 2007) Aylett (2010, 101) identified another two approaches with ladder metaphor, describing different stages of state-citizens relationship in the participatory process. Besides Arnstein's approach (discussed above) there are Wilcox, and Eyben. Wilcox's ladder is more collaborative and focuses on consensus (stages: information, consultation, deciding together, acting together, and supporting independent initiatives), the most recent, Eybens's ladder is more rights-oriented and is created mostly for the international environment (stages: instrumental participation, civil and political liberties, economic rights, social rights, cultural rights, participatory rights). Another approach is Fung's model of democracy cube with three dimensions: how participants are selected; authority; and communication and decision. (Bobbio, 2018)

Also, Aylett's dichotomy of Habermasian (consensus-based) and Foucauldian (confrontational) approach to governance is of great use, when we take into consideration that some changes are driven by a conflict and some by a deliberation (Aylett, 2010). While dealing with participation mechanisms, Rowe and Frewer (2005) developed a communication

model, where the information flow decides which type of involvement is on stake – communication, consultation or participation.

Citizen participation often describes the relationship between government and citizens; for relationships in the organization, the participatory design is being used. The participatory design originates in Scandinavia in the 1960s and 1970s in order to give a voice to workers while introducing new technology or work practices. Slowly, it gained the prominence also in other fields of society. In the essence of participatory design is "the idea, that people who are affected by a design should be involved in making decisions about it" (Tuhkala, 2021, 643). The participation doesn't come off when people are simply questioned, but they have to express their opinions also in other ways like sketching, drawing, modeling etc. They have to adopt the feeling they have influence on the decision, that their word (or drawing…) matters. It is preconditioned that they are provided with the access to relevant information, they must be independent and they are entitled to participate. The basic underlying precondition is of course, there are sustainable design methods, which make it possible.

There is no clear decision on the appropriate methods, and no single way of doing it right. The problem is that the participants' opinions are not always included in the way it was intended in the beginning; that they are being left out. We must use a good portion of critical reflection on who starts the participations, who participates and who benefits. There are different levels on the inclusion of participants in the participatory design, in our literature review there are often children, teenagers and other young people (see 2.2 Stages resp. Lundy, 2007).

Tuhkala (2021) points out, there is a shift going on where designing an object is replaced by establishing the community. This makes it possible that after the actual design is over, it lives in the community members who take the ownership and responsibility for maintaining and continuing the project and making it sustainable. Again, with the students in mind, it is often

the case that the participants of the design do not see the results of the process when there is a big change at a stake.

1.2 Student-centred learning

Student-centred learning, compared to participatory design and citizen participation, bears many contact points with the latter. As well as the government grants some responsibility to the citizens, the teachers concede the authority to the students, which in turn take over the responsibility for learning.

Student-centred learning (SCL) was often linked to *flexible learning, experiential learning* or *self-directed learning.* The term was already in use in 1905 and then expanded after the WWII. Some connected the term with Piaget and Malcom Knowles. In the 1980, it was described as a "shift in power from the expert teacher to the student learner". There was the idea, that teacher didn't interfere but acted as a guide. In the first decade of the 21st Century, some claimed that the term SCL was overused and it didn't label the real SCL. (O'Neill and McMahon, 2005, 30)

O'Neill and McMahon (2005, p31) first describe various definitions of the SCL: It is about the distinction between teacher/content oriented concept and student/learning oriented concept. The learner constructs knowledge; the teacher is facilitator of learning and not presenter of information. Lea et al. (2003)[3] summarized following features: active learning, deep learning and understanding, responsibility of the learner, autonomy of the learner, teacher-learner interdependence, their mutual respect, reflexive approach to

[3] Lea, S. J., D. Stephenson, and J. Troy (2003). Higher Education Students' Attitudes to Student Centred Learning: Beyond 'educational bulimia'. Studies in Higher Education 28(3), 321–334.

learning/teaching. Gibbs (1995)[4] emphasizes learner activity, learner activity outside, process rather than content, key decisions made by learner in negotiation with teacher. Another depiction (Brandes, Ginnis, 1986)[5] lists learner's responsibility, his involvement, relationship between learners more balanced, teacher as facilitator, learner's experiences important for education, self-perception of the learner alters with learning. The authors concluded two important characteristics: **choice** of the learner in the education and learner's **doing** or his active role; some add also the shift in teacher-learner **power relationship**.

With inspection of different implementation approaches, the authors see the relationship between student-centred and teacher-centred learning as a continuum: different level of student choice, student more active/passive, power primarily with student/teacher. They deduced three sets of implications: for the **curriculum, teaching/learning methods and assessment**.

The curriculum design has adopted **modularisation**, an approach for allowing students more freedom in what and how to study, albeit it bears some danger of individuality and disempowerment. **Problem-Based Learning** (PBL), with problems/issues/triggers enables learners to develop their own learning goals. It should be not confused with problem-solving or problem-oriented exercises that are more controlled by the teacher, albeit they are promoting active learning. In the realm of teaching/learning methods, they follow the University of Glasgow[6] while discerning four strategies: making the student more active

[4] Gibbs, G. (1995). Assessing Student Centred Courses. Oxford: Oxford Centre for Staff Learning and Development.

[5] Brandes, D. and P. Ginnis (1986). A Guide to Student Centred Learning. Oxford: Blackwell.

[6] University of Glasgow (2004). Student Centred Learning. http://www.gla.ac.uk/ Otherdepts/TLS/Project/Reports

(exercises in classroom, fieldwork, use of CAL); making the student more aware of his activity; focusing on interactions (tutorials, discussion groups); focusing on transferrable skills.

In the field of assessment, some scholars find giving marks is over-emphasized compared to giving advice; the same with the comparing students instead of focusing on personal improvement. Instead of summative assessment, teachers should use more formative assessment in form of feedback on essays, written comments on assignments, grades during the year, answers for feedback only. Another step towards student-centredness would be self-assessment, which provides an increased sense of autonomy. This can be widened also by choice of the mode, the student would like to be assessed in. The authors list examples like diaries, logs, journals; portfolios, peer/self-assessment, learning contracts and negotiated assessment; projects, group work, profiles, skills and competences. There are also possible formats to include students in the assessment before the task is set and after it is completed. The authors posed a question of effectiveness and criticism of student-centred learning. Several studies have found that SCL is better in terms of study skills, understanding, but initially students were more slowly. They also pointed out that the learner's beliefs about one's own learning are crucial for the acceptancy of SCL.

Not all the methods and featured above are clearly linked to non-traditional classroom, but it's inherent, that characteristics as teacher as facilitator, autonomy of the learner, process rather than content, student choice, active learning, focusing on interactions like discussion groups cannot happen easily in traditional, factory-style classrooms. This is true even more, if we consider all the features of learning environments today, which go far beyond a simple seating arrangement – organisational, relationship, technology context… the whole school culture is at a stake (see Chapter 3).

2. Citizen participation

2.1 Dimensions

The concept of citizen participation often evolves around the metaphor of a ladder. This can of course point to one specific dimension. The Arnstein's ladder refers to citizen power. Many other models followed the lead (IAP2, Hart). Role-oriented model by Callahan (2007) is as well one-dimensional along the citizen power, but it is more reconciliatory compared to Arnstein, as it acknowledges that for some situations other forms (roles) are more appropriate that citizen control, the highest rung in Arnstein's ladder. Burke's problem-oriented model evolves around the strategies to solve a specific problem, like education/therapy, behavioural change, staff supplement, co-optation and community power. Again, this can be related to Arnstein in a way, that education/therapy is considered as nonparticipation and community power addresses a conflict. With some approaches, described above, we already pointed out there are more dimensions available to give us a hand in describing citizen participation. Bobbio (2018) lists six dimensions, like participation vs. deliberation, online vs. on-site, open-door setting vs. mini-publics, hot deliberation vs. cold deliberation and decision-making vs. consultation.

Bearing in mind our intention to include students in the redesign of learning environment, we can clearly see that conflict-based approaches are not sustainable for us. They are usually targeting societal changes when the power relationships are clearly favouring one outcome. To address the very sensible student-teacher relationship, which is amended by other stakeholders like local community, parents, experts, architects, a very useful approach was developed by Lundy. Despite derived from the Convention of the Rights of the Child, it develops a sensible narrative in approaching children

Citizen power

The Arnstein's[7] ladder of participation experienced big acclaim, numerous critiques, several amendments, and set the cornerstone of every serious engagement with the topic. A researcher of her work, J. Gaber (2019), discovered that with the Ladder she mainly aimed at the citizens; but bearing in mind, there is also the other side, the city governments, she developed a more sensitive approach for the authorities in 'Bulletin' (see below). It is sensible to read both texts together since they show the balance and overcoming of the conflict, Arnstein had in mind.

A Ladder of Citizen Participation (Arnstein, 1969) is a short text, often challenging and sometimes humorous, and showing a great degree of fidelity. She sees the citizen participation as a categorical term for citizen power. It is mainly about how citizens with lower income and lack of other resources are included in the policies. Since she was a part of the Model Cities program, she developed the typology around examples for the field, like urban renewal or anti-poverty programs. The limitations of the typology were in her opinion were threefold: powerless citizens were not a homogenous group; there was no analysis of specific itineraries how to reach the desired participation; the nine levels of typology were abstracts.

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[7] Sherry R. Arnstein (1930–1997), one of the leading figures in development of citizen participation in the 1960s on the federal level; being a part of the Model Cities program, initiated by the US Department of Housing and Urban Planning, she developed a pregnant typology of the relations between the authorities and citizens, especially about the question to what extent the citizens have control over the process.

The eight levels are manipulation and therapy (first two are actually non-participation), then informing, consultation and placation (summed up under tokenism); then partnership, delegated power and citizen control (the last three forming true citizen power). (Arnstein, 1969)

Under manipulation, Arnstein shows how people are invited in boards and "educated" or their support is engineered. Citizens are often not well informed, do not have access to independent expertise, they do not ask the right questions. Similar goes with therapy, where "tenant groups are used as vehicles for promoting control-your-child or cleanup campaigns", in order to bring their values in adjustment to the values of the society. (Arnstein, 1969)

Informing, often also an important process in other levels of the level, is considered only as "one-way flow of information", in forms of news media, pamphlets, posters and responses to inquiries.[8] Consultations are big step toward full participation, but there is no guarantee, citizens' views would be adopted. It takes form of attitude surveys, neighbourhood meetings, and public hearings. Placation bears more participation, but tokenism prevails: it is a strategy where "the have-nots can be easily outvoted and outfoxed." She gave an example, where people were carefully chosen to have a role in the boards, of course with no influence at all. Later she reveals some findings of the staff study where cities didn't encourage citizens to take their part in the boards in many ways. Partnership is the first "real" participation, where the citizens group has background in the community, own financial resources together with technical support. Arnstein remarks, the partnership arose only if citizens demanded so. Delegated power is the case, when citizens achieve "dominant decision-making authority over a particular plan or program." (Arnstein, 1969) She names an example, where citizens have

[8] For information flow, see a typology, developed by Rowe and Frewer, 2005.

created a corporation for preparing the entire plan. She is also cautious with the assessment on citizens power since the city council still has the final veto power. Citizen control, the topmost rung in the ladder, can be seen in a neighbourhood corporation with no intermediaries in access to funds. She lists some arguments against: separatism, balkanization of public services, higher costs, less efficiency, exposure to local hustlers…

Prior to the article on Ladder, in 1968, she submitted a text, named by J. Gaber as Technical Assistance Bulletin No. 3; compared to "A Ladder", here she adopts a more moderate tone and seems to addressing more the local governments. There, she elaborates there important topics: the landscape of decision-making process is divided in three sectors, 1) government with agencies, 2) model neighbourhood and 3) coalition of 1) and 2). The latter is a separate structure, overcoming the usual image of a flow from government to community of vice versa, when talking about citizen participation. The second topic is, referring to the first one, how the boundaries between the three sectors are set and what happens when responsibilities overlap. In the last topic, she devotes some attention to the questions on the composition of the sectors, the representativeness of the representatives and how the minorities will be heard. (Gaber, 2019, 199)

Categorizing different participation processes is possible under the provision of different dimensions. Arnstein's ladder of participation is stretched along the dimension of citizen power, comments Bobbio (2018). The five level participation spectrum of International Association for Public Participation IAP2 (inform, consult, involve, collaborate, empower) is not as value-laden as Arnstein's, but still along the same dimension.

On the example of Portland, Gershman (2013) shows, how the public participation techniques primarily aimed at informing the public and gathering their input. No attempts were made in order to facilitate partnerships and delegating power to citizens. The nature of Portland Plan

itself doesn't even call for such a power delegation. The problems of transparency and unequal representations are as well persistent in such settings. It is the policy makers, who determine whether the citizens should be involved and to what extent their voices will be included in the process.

Problem-oriented model

Burke (1968) emphasizes the need and aspiration of an increasing number of ordinary people for greater participation in decision-making, both at the local and federal levels. However, the issue of participation was often a matter of conflict and confusion. The main dilemma evolves around the conflict between participatory democracy and expertise in decision-making.

The starting point is that participation is one of the most important democratic elements, and that without civic participation there is no democracy. However, many authors agree that it is impossible for everyone to participate in the decision-making process. A real example of this is the issues of national security. The problem arises when certain groups do not want to allow another civic group to participate in the decision-making process in a given area. What to support, greater citizen participation or greater expertise in decision-making, is one of the crucial questions.

Citizen participation can be a strategy, ie. instrument to solve a particular problem, like prevention of juvenile violence, certain infrastructure projects… By participating, citizens want to achieve a goal, to assert their interest through participation. There is not just one specific strategy but several of them. Which one citizens should choose will depend on a number of things, such as human or financial resources, the nature of the issue to be addressed, and the environment in which this citizen participation strategy takes place. There are five strategies:

education-therapy strategy behavioral change strategy, staff supplement strategy, cooptation and community power strategies.

By **education-therapy strategy** the author refers to a process in which the citizens in participation do not solve certain problems and situations but primarily educate themselves, acquire new values in the spirit of democracy, but above all acquire knowledge about participation as a value. This is explicitly visible in the therapy part of the strategy that is developing self-confidence, sense of responsibility and self-reliance in the field of urban renewal or anti-poverty programs. Similarly, Arnstein defined non-participation.

Behavioral change strategy is used because it is easier to change a person's opinion when is is in a group, than on an individual level. The group influences the individual and directs him. For this strategy to succeed, there must be a desire for both to participate, as well as certain benefits, both for the group and for the individual. The group (or individual) resists the change when it is imposing on it. In order to distinguish it from education-therapy strategy, it needs to be emphasized that the target is not an individual but a group. There are two difficulties. First, individuals are often unable to understand the processes, issues, and matters being decided. Second, it is impossible to include everything in the decision-making process in one place.

Staff supplement strategy is one of the oldest. If an organization or group does not have paid professional staff, citizens may be able to volunteer in that organization. It is important to note that certain organizations in order to assign some jobs to volunteer organizations. Certain projects are purposely made to be carried out by a volunteer group. Main objective of this strategy are to exploit abilities and free time of individuals, in order to achieve a different sorts of goals. The author believes it is difficult to assess the usefulness of the strategy.

Cooptation strategy means involving certain citizens in the organization in order to prevent obstruction. Their involvement is determined on the basis of their reputation, material and financial status, knowledge, competition can be one of the reasons for inclusion in the organization as well as one of the most important elements to solve a certain thing. That is informal strategy. Certain citizens get involved to increase the credibility of the organization itself. Citizens involved through various projects and organizations, increase cooperation and communication with each other, and thus awareness of the problem and the need to solve it. Cooptation has its two forms, informal and formal. Formal strategy is based on need of legitimacy through which representatives of certain groups are involved (labor, business, professional, religious or women's organizations, see section *Stakeholders* later).

Community power strategies are two; one is in fact the informal cooptation strategy where the influential are included in the organization. Another one is the conflict strategy (see Foucault). This strategy works best for organizations that are committed to a cause, rather than to specific issues. However, the major issue is to maintain citizen interest, which appears to be very difficult to maintain for a long period of time.

It is clear that not all of these strategies are applicable to all organizations. Behavioral change strategy as well as staff supplement strategy are best suited for community planning. Both strategies need knowledge and experience on how to handle group behaviour to be successfully implemented.

Habermas and Foucualt

Aylett (2010, 102) addressed two main approaches to governance, one labelled **confrontational** (Foucauldian) and the other **consensus-based** (Habermasian). Aylett, trying

to reconcile Habermas's concept of communicative rationality and Foucault's concept of freedom. **Habermas** puts participation and consensus on the same line and argues that the debate, leading to the consensus, is central human experience. In his view, orderly designed institutions and procedures can assure equal participation. In the practice, it was often shown, that institutions are often stopping pursuing true deliberative participations and instead gave way to efficient implementation. Often, the institutions encouraged instrumentalism.

On the other hand, conflict was seen as a chance for true participation. Social movements can be transformed into sensible social change and state intervention. In **Foucault**'s view, political engagement starts "with an understanding of and resistance to inequalities of power and the logics, that are used to justify and normalize them" (Foucault, 1981, pages 253–254; after Aylett 103) Foucault sets resistance and struggle in front of consensus, because "oppressive relationships can persist in seemingly positive institutional reform". (Aylett 2010, 103)

Since our approach is consensus-based and this study deals with the failure of the approach, it is only marginally interesting for us, since our approach won't fail (sic!). This can serve us of course, if there would be a greater amount of cynicism from the side of the government, or in our case school management or teachers. It shows, how the relationship between administrator and citizen advanced from ruler-subject relationship but not entirely (see Callahan, 2007). Therefore, it is still possible in young democracies like South Africa or in countries with huge social differences and oppressed minorities. This can also be the case in the schools and HEI-s if the predominant culture doesn't foster dialogue between teachers and students, and other stakeholders as well. You can find a lengthier description of the Aylett's case in the Appendix 2.

Role-oriented model

According to Callahan (2007), citizen participation is defined as participation in the planning and administrative processes of government. It is the interaction between citizens and administrators that focuses on policy issues and service delivery. Citizens are seen as an integral part of policy-making and decision-making. It is up to the holders of power and public authority and function to find a balance between equality, representation and participation on one hand, and efficiency on the other. The public administration is obliged to perform duties that will benefit citizens, as well as to encourage them to participate. Also, they must work on greater connectivity and trust of citizens, and thus encourage them to raise their knowledge and foster critical thinking in order to be able to participate in the decision-making process as efficiently and effectively as possible.

Changes in values, growth of mobility and critical thinking are some of the desired side-effects, which led to the increased research and use of the concept of citizen participation. But there are very few studies when it comes to ways, when and how to involve citizens in these processes. Often heard concerns are: direct democracy is inefficient, time-consuming, costly, politically naïve, unrealistic.

Citizens may have different roles in these different models of participation. They can be voters, active decision-makers, subjects – all in one model. When citizens are satisfied with government policy, decisions and results, then they lack motivation and interest in active participation and deliberation in a given model, and vice versa. The author relies on the typology and models in which citizens and the public administrator can have different roles and relations between them. In the relationship Citizen as subject/Administrator as ruler, the administrator is an authority figure, citizen obeys. The relationship Citizen as voter/Administrator as implementer reflects a representative democracy, citizens vote,

administrators are elected. Citizen as client/Administrator as expert: here the citizen is asked for input, but the administrator does the work without further cooperation. In the model Citizen as customer/Administrator as professional/entrepreneur, administrator adopts private sector customer-centred approach. Citizen as citizen/Administrator as public servant: here the administrator is facilitator and partner to serve and empower citizens. The relation Citizen as co-producer/Administrator co-producer- reflects the ideal of co-production and collaboration for solving some problems together with shared responsibility. Citizen as investor/Administrator as broker: this relationship is cooperative and communal wealth creation promotes sharing among people. The model Citizen as owner/Administrator as employee reflects a change of role in which citizens have much greater authority, and in this case, the citizen is the owner, the administrator must comply with the requests (see Table 1).

Table 1: Administrator- Citizen Interactions

Administrator role	Citizen role	Managerial approach	Dynamic	Method of Interaction
Ruler	Subject	Coercive	Authority	Government Control
Implementer	Voter	Representative	Trust	Voting
Expert	Client	Neutral Competence	Control	Compliance
Professional	Customer	Responsive	Passive	Consultive
Public Servant	Citizen	Facilitative	Engaged	Deliberative
Co-producer	Co-producer	Collaborative	Active	Partnership
Broker	Investor	Communal	Cooperative	Co-investing
Employee	Owner	Compliance	Conflict	Citizen Control

Source: Callahan, 2007, 1186

Regardless of the relations and roles in question, it is the public administrator, i.e. the government, who ultimately determines, which role will play, more precisely to what extent civic participation will be possible (see Arnstein).

Three researchers, King, Feltey, and Susel,[9] conducted a research on obstacles to greater civic participation. Based on interviews conducted with experts in the field, citizens and public administrators, they came up with answers from several different structures on how to increase and establish civic participation as well as its effectiveness. Some of these obstacles are the nature of everyday life, administrative processes, and techniques of participation. The most commonly used conventional model of participation causes the alienation of citizens and dominating role of administrators as experts. In order to overcome these obstacles, it is necessary to train and educate both citizens and government officials, i.e. political and public administrators, and to redesign the administrative processes and structures.

There is a big gap between the theoretical concept of participation and its effect in practice. In order for public administrators to be able to more actively promote the participation, more research is needed regarding the practical part of deliberative democracy. Similarly, the authors should shift their focus from obstacles to successful practices, which will be discussed later.

Space, voice, audience, influence

A way, how to conceptualize child's right to participation, is reflected in four elements or, rather, stages developed by Lundy (2007): space, voice, audience and influence.[10] At first, children must have safe and inclusive opportunities to form and express their view (space),

[9] King, C. S., Feltey, K. M., and Susel, B. O. (1998). The question of participation: Toward authentic public participation in public administration. Public Administration Review, 58 (4).

[10] Previously, we mentioned Eybens's ladder, which is more rights-oriented and has following stages: instrumental participation, civil and political liberties, economic rights, social rights, cultural rights, participatory rights. With Lundy, we are on the level of participatory rights.

then they must be able to express this view (voice), this view must be heard by those responsible for listening to (audience), and this view must be taken seriously and must be transferred to action if needed (influence). Lundy's Model Checklist for Participation was included in Irish National Strategy on Children and Young People's Participation in Decision-Making. It can of course serve also in developing participatory practices while dealing with children in primary and secondary schools. The provisions can be as well included into HEIs in the process of repurposing of educational spaces.

Based on the research, conducted in Ireland in 2005, Lundy examines the interpretations of provisions of Article 12 of UN Convention on the Rights of the Child. The previous extensive research also pointed out some obstacles with the implementation of the Article. With her cautious and extensive approach to meaningful legal interpretation and children's rights interpretation, she dismantled the danger of simplistic proceeding and outlined a model, following both paragraphs of the article: the elements are Space and Voice, Audience and Influence. She believes to propose user-friendly and legally sound model.

Article 12

States Parties shall assure to the child who is capable of forming his or her own views the right to express those views freely in all matters affecting the child, the views of the child being given due weight in accordance with the age and maturity of the child.

For this purpose, the child shall in particular be provided the opportunity to be heard in any judicial and administrative proceedings affecting the child, either directly, or through a representative or an appropriate body, in a manner consistent with the procedural rules of national law.

Lundy claims the article 12 was one of the most controversial provisions of the Convention, since it recognises the child as a full human being. (Freeman, 1996)[11] It was also subject of criticism of the UK government by the UN Committee on the Rights of the Child. In the research project in Northern Ireland (2005)[12], similar points were criticised. The research scrutinized six core themes: implementation, family and care, education, play and leisure, health, welfare, criminal justice and policing. They gathered data by an extensive review of thitherto research; by documentary analysis of law and policies; by employing focus groups and interviews with adults from different areas, concerning children and youth. Besides, they involved over 1000 children through drawing, writing stories, designing poster or other appropriate tasks, coming from schools or outside. The central finding was the children found *the most important issue not having a say when it is about themselves*. This was underpinned also by other similar studies.

Since the adults are the ones who should maintain the fulfilment of the Article 12, Lundy identifies three categories of their concerns: (1) scepticism about children's capacity; (2) undermined authority of adults; (3) too consuming in the terms of time and/or money, which is very similar to Arnstein's findings. Lundy finds, these concerns are largely disproved by the much work done in recent years and growing body of publications addressing the problem.

The much dangerous obstacle Lundy sees in limited awareness of the provision itself. The Convention itself should be included in initial and in-service training. Lundy argues it is not about good practices, but the article itself is legally binding. She names several collocations as

[11] Freeman, M. (1996) Children's education; a test case for best interests and autonomy, in: R. Davie and D. Galloway (Eds) Listening to children in education (London, David Fulton).

[12] Kilkelly, U., Kilpatrick, R. and Lundy, L. et al. (2005) Children's rights in Northern Ireland (Belfast, Northern Ireland Commissioner for Children and Young People).

‘the voice of the child’, ‘pupil voice’, ‘the right to be heard’ etc., which she rejects in order not to hamper the proper interpretation of the article and not to lead to oversimplification of the matter. In the schools, children should be included, when decisions affect individual pupils, when school policies are developed and when government policies and legislation are determined. Also other authors in our literature review see education as one of the key issues in overcoming obstacles (see Callahan, Burke, Bobbio, Eide).

She further rejects the propensity to “cosiness”. She sees one of the inherent difficulties that “the initial goodwill will dissipate” (Lundy, 2007, 931), since the implementation will “challenge the dominant thinking, generate controversy or cost money” (ibd.). Article has two elements: the right to express the view and the right that this view is given due weight. Subsequently, she graphically shows the relations of Article 12 with other parts of the Convention and emphasizes the interlinked nature of the article.

Figure 2: Conceptualizing Article 12

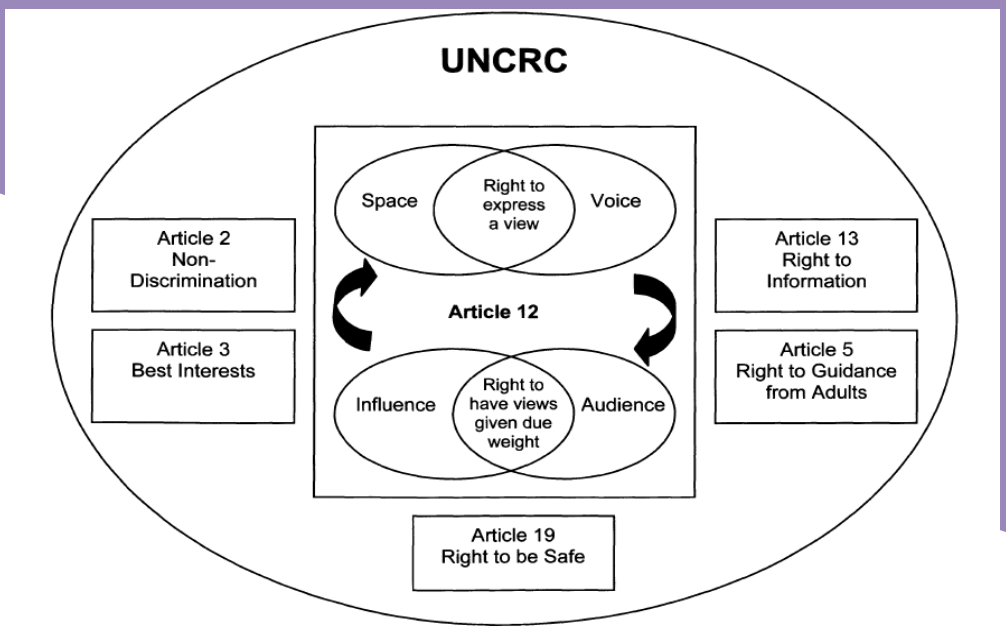


Figure 1. Conceptualising Article 12

Source: Lundy, 2007, 932

Lundy divided the provisions of Article 12 in four separate steps. First two and second two considerably overlap. They are related to paragraph 1 and 2. The order has also chronological-circular logic (Lundy, 2007, 933).

Space: Children must be given the opportunity to express a view.

Voice: Children must be facilitated to express their views.

Audience: The view must be listened to.

Influence: The view must be acted upon, as appropriate.

While adults can give **space**, many pupils complain, the issues to be discussed are predetermined by teachers. One often-neglected point, on the other side, is that children have the right to say no – 'consultation fatigue'. The space offered to children must be safe – no fear of rebuke or reprisal. Teachers' authority is often alleged victim of the process, which is far wider. Lundy proposes the possibility of anonymous expression of views. Also special help should be offered to less articulated and literate children or children with disabilities, not to let them step in the trap of 'double denial'.

Voice, expressing the views, concerns children needing help to do it: by letting them sufficient time; by giving them access to child-friendly documentation; by including them in capacity-building; by training the adults in the process. There are also possibilities for younger children, like plays, puppet shows, videos, drawing … Sometimes use of assistive technology or interpreters is also in place.

Audience stems from the provision that children's views must be given due weight. This right hasn't an appropriate equivalent in the human rights. Typical for this aspect is that many children in school don't have the impression they were listened to. Lundy suggests teacher

must be trained to listen and also capable of recognizing non-verbal messages. Even if this is ensured, there is often to encounter the situation when children in school councils are listened to, but this doesn't influence the decision-making.

Influence refers to the fact that appearing to listen to is much easier than giving due weight to children's views. Although this is linked to the age and maturity, it is the adults who often act as gatekeepers. Here, Lundy includes Article 5, which imposes adults to provide guidance to the children according to their capacities. As well, Article 3 is important, stating that children's best interests are in the forefront. Lundy relies here on the idea that adults can only act against the child's preferences if this denies the child's right to an 'open future' or interferes with their development interests or restricts their life choices in an irreparable way. Criticism of the Article 12 goes that it is easy to pursue tokenistic or decorative participation. She refers to Hart's ladder of participation and to many models serving as a tool to avoid such participation. Hart's participation typology (1992), aiming at youth, reflects Arnstein's ladder of participation. He differentiates the following eight rungs: manipulation; decoration; tokenism (non-participation). Assigned, but informed; consulted, but informed; adult-initiated, shared decisions with children; child-initiated and directed; child-initiated and shared decisions with adults (last five rungs are degrees of participation, see section 3.2, Figure 5).

The real challenge is not just listening but to act accordingly. Children are often asked but then not told if and how their views were integrated in the decisions. Another important concern is that the notions 'consultation' and 'participation' are having adults having their role with the decision. Here Article 12 and Article 5 are somehow complementary, for providing guidance (Art. 5) becomes less obvious with age and maturity.

Stakeholders

Here, we follow the UNECE paper (2016), and their definition of notions "public", "disenfranchised people" and the situation, where the relevance of the issue is not obvious; it concerns primarily the environment, but it can be useful for our purposes.

"The public" or "the public concerned" is not always clearly defined. Wide range of interests, also from adjacent areas like health or economy, should be included, as well as inclusion of groups hard to reach. And surprisingly, they also advise to include strong lobby groups who potentially can hinder the decision-making process and would anyway express their opinion (see co-optation strategy with Burke, 1968). In practice, it is often the professionals who are included in the process since they do it as a part of their jobs.

Under the **participation of disenfranchised** people, the UNECE sees the elderly, the young, the disabled, the poor, minorities and people living in remote locations. These groups have potential difficulties using internet and reading long, technical documents; or they are not being taken seriously. Consequently, they aren't willing to participate. So besides the approaches mentioned above, the planners could use following: publications in other languages, Braille, social media; holding meetings in remote/rural locations as well; actively seeking people from these groups to participate by posting, giving talks at events or asking community leaders to share the news; involving representatives and pre-existing groups of disenfranchised people; using financial resources when there otherwise would not be any participation.

The other important issue is participation **where the relevance of a plan or programme is not obvious**. It could be a remote, sparsely populated area, or the impact is not clear to people affected, or the plan is affecting future generation. In these cases, specific NGOs or other

organisations should be included; more young people; or the local governments should be urged to include the plan in their processes.

For our project, it means to reconsider our target groups, who is disenfranchised and hard to reach, and in what way we are dealing with future generations. We should then adopt our ways of reaching them out.

2.2 Planning and mechanisms of citizen participation

Planning citizen participation

Brody, Godschalk and Burby (2003) see bigger role of citizen participation in urban planning, but the authorities are not always readily accepting it. The authors investigated how this type of participation is achieved in planning at the local level, and whether this involvement has resulted in even greater participation.

Citizen participation has a long history in planning in US, such as the Urban Renewal Program in 1954, when it comes to the federal level. This includes the right of a citizen to be informed, consulted and the right to express their opinion regarding an issue that is planned and decided. This is supported by the fact that different organizations and individuals, with their knowledge, experience and skills, can contribute a lot.

Brody, Godschalk and Burby (2003) introduce a typology of six critical choices, based on which planners decide on citizen participation programs, namely: 1. Administration – whether to prepare a participation plan and how to staff citizen involvement efforts. 2. Objectives – whether to educate citizens, seek their preferences, or grant them influence (see below – communication, consultation, participation with Rowe and Frewer, 2005). 3. Stage – when to start encouraging citizen involvement in the planning process. 4. Targeting – which types of

stakeholder groups to include in participation efforts (see section *Stakeholders* above). 5. Techniques – what types of participation approaches to employ. 6. Information — what types of information and dissemination processes to incorporate in participation activities.

Brody, Godschalk and Burby (2003) carried out a comparative study in the case of the two states, Florida and Washington, as well as their practices. **Choice 1. Program administration** of both countries in more than half of their jurisdictions has clear plans and expresses the desire and need for citizen participation in planning. **Choice 2. Objectives for citizens involvement.** It is also important to set goals based on which citizens will have a greater desire to participate in planning. **Choice 3. Stage of citizens involvement.** Brody, Godschalk and Burby (2003) emphasize the importance of getting citizens involved as early as possible, for several reasons. First, citizens are educated and informed at the very beginning. Second, planners can get information from citizens right at the beginning, to identify what they need, what their preferences are. The later the public is involved, the bigger the risk of less support for the plan, as well as less public interest, which can lead to the failure of the plan itself. Florida is characterized by the involvement of citizens in later stages, primarily in the form of public hearings and debates. Washington, on the other hand, uses visioning techniques more in the pre-planning phases.

Choice 4. Groups to target. States use different criteria and requirements to be met. According to the survey, Florida local authorities tend to have fewer groups willing to involve in planning than Washington. Washington strives to include media groups, schools and special districts…

Choice 5. Techniques for citizen input. When we talk about inclusion techniques, the most commonly used technique used by these two countries according to the research is formal public hearing. Other techniques used are open meeting, facilitated workshops and citizen

advisory committees. Washington is more in favour of open meetings with professional staff, while Florida is more in favour of public hearings.

Choice 6. Providing information. It is important for planners to decide what information to use, as well as what techniques and how to inform citizens about planning. Florida shares information on showing maps, trusted areas that are threatened in a number of different ways. Washington favours giving summaries of the current involvement of citizens in planning, as well as emphasizing the state's readiness for greater and further participation. Washington has stronger support for citizen participation, and Florida has stronger jurisdiction on what local authorities receive when they take on a planning mandate.

This research shows how planners, based on the choice of certain critical choices, can decide on the degree of citizen participation in planning. The results of the research prove that if administrators pay more attention to greater citizen participation, as well as to the problem itself, there will be greater public involvement as well as their commitment to the problem. The closer the plan is to the population, the more informed it is, the greater the chance that the same plan will be implemented faster, more efficiently and with greater civic participation. However, Brody, Godschalk and Burby (2003) emphasize that if the authorities want to increase citizen participation, they must do something more than classical informing and hearings. It is necessary to provide written plans from local governments, with clear personnel and financial requirements and resources needed for the plan to be successfully implemented. Prior to the implementation, the local government must inform the planners who, when and how it will include. This information also applies to citizens, so that each interested party can prepare in time. The goals and techniques of the plan itself must be clearly stated. Most importantly, the plan has the best chance of success if citizens are involved in the planning process as soon as possible. Any plan to be successful and effective must include a wide range

of occupations when it comes to participation, because that will provide depth and breadth of knowledge. In addition to legislation, awareness of the importance of citizen participation in planning must be increased.

Typology of mechanisms

Bobbio (2018) argues that participation is a loose concept; despite the numerous claims he thinks, that public participation isn't so often. It is a procedural instrument for policy makers on a way to shape a policy; when in use, they seek empowerment, legitimacy and/or learning. Citizens participation can provide them with cognitive resources (knowledge, information) and/or political resources (consensus, legitimacy).

Bobbio describes the exuberant landscape of participatory practices, he refers to Rowe and Frewer (2005) who have listed over 100 public engagement mechanisms. The common aspects of these devices are, according to Bobbio (2018):

- highly structured, with well-defined phases;
- pre-defined duration; strict control over time;
- interaction in small groups; small round tables preferred;
- complete, balanced information for the participants;
- neutral moderators or facilitators (professionals!).

Table 2: Dilemmas in public participation design (adopted after Bobbio, 2018)

PARTICIPATORY ARRANGEMENT		DELIBERATIVE ARRANGEMENT	REMARKS
participation	vs.	deliberation	giving voices to neglected vs. philosophically pondering the choices
online	vs.	on-site	better for small undemanding topics vs. hearing other participants
open-door setting	vs.	mini-publics	biased arena, minorities under-represented
hot deliberation	vs.	cold deliberation	partisan actors vs. too detached from the real problems
decision-making	vs.	consultation	overestimated; formal power vs. binding effects

Source: Bobbio, 2018.

Bobbio attests many participatory processes a portion of ambivalence, where you cannot escape the impression of being unable avoiding the tokenism or manipulation as defined by Arnstein. In that way, participation means giving voice as well as gaining legitimacy at the same time (for concerns about giving voice see Lundy, 2007); the same happens with openness for new solution and enforced confirmation of already adopted solutions. You can learn from citizens and you can discuss already framed problems. Sometimes social conflict gets momentum by participatory process.

List of participatory mechanisms and its usage

Rowe and Frewer (2005) have identified 106 public engagement mechanisms and made a typology out of them. They acknowledge there must be more – in other countries in other language – but they compiled a list below. In the forefront, they have made a substantial definition of key concepts – they distinguish between *public communication, public consultation* and *public participation.* Thereby, referring to Arnstein and other who produced similar typologies and using communication model, they distinguish according to the direction

of information flow – either from sponsor to public representatives (communication), from public to sponsor (consultation) or bidirectional (participation). The authors have produced this typology out of the participatory mechanisms while others focused more on the types as on specific mechanisms; Callahan (2007) called for this as a next step in the research.

Figure 3: List of participation mechanisms by Rowe and Frewer

- Act Create Experience (ACE) (1)
- Action Planning (1, 2)
- Appraisal (Community, Public), e.g., village/parish/ environmental. (Also "Monitoring," e.g., citizen monitors and scrutiny.) (1,2)
- Arbitration (Mediation) (3, 4)
- Broad-Based Organizing (1)
- Cable Television (Not Interactive) (2)
- Cable Television (Interactive) (3)
- Charette (3)
- Choice Methods (1,2)
- Citizens' Advisory Committee (CAC) (3, 5, 6, 7, 8, 9)
- Citizen Advocacy (1)
- Citizen Employment (3)
- Citizen Honoraria (3)
- Citizens' Jury (1, 2, 6, 10, 11, 12, 13)
- Citizens' Panel (Research) (2)
- Citizens' Panel (Standing) e.g., Health Panel (2, 10, 14, 15)
- Citizen Review Board (3)
- Citizen Training (3)
- Community Dinners (16)
- Community Forum - of: Place (e.g., Neighborhood); Issues; Service Users; Shared Interest (2, 10)
- Community Indicators (1)
- Community Plans/Needs Analysis (10)
- Community Site Management Plans (1)
- Community Strategic Planning (1)
- Community Technical Assistance (3)
- Complaints/Suggestion Schemes (10)
- Computer-Based (IT) Techniques (2, 3)
- Conference (generic term, often with qualifier e.g., "planning," "deliberative," "visualization") (3, 10, 17)
- Consensus Building (1, 2)
- Consensus Conference (2, 6, 18, 19, 20)
- Consultation Document (Consultation) (10)
- Consultative Panel (2)
- Coordinator or Coordinator-Catalyst (3)
- Co-option (Citizen Representatives on Policy making Bodies) (3, 10)
- Deliberative Opinion Poll (2, 21)
- Design-In (3)
- Drop-In Center (also Neighborhood Office, One-Stop/First-Stop Shop) (2, 3)
- Enspirited Envisioning (1)
- "'Finding Home" ("Visualizing our future by making maps") (1)
- Fishbowl Planning (3)
- Focus Group (3, 6, 10)
- From Vision to Action (1)
- Future Search (1, 2)
- Game Simulation (3)
- Guided Visualization (1, 2)
- Hotline (3)
- Human Scale Development Initiative (1)
- Initiatives (Citizen Initiated Petition) (2, 22)
- Imagine! (1)
- Interactive Web-Site (10)
- "Issues, Aims, Expectations, Challenges & Dialogues in a Day" (1)
- Learning Service Team (2)
- Local Sustainability Model (1)
- Maps/Mapping (Village, Parish) (1, 2)
- Media-Based Issue Balloting (3)
- Meeting–Community Sponsored (3)
- Meeting–Neighborhood (location-based) (3)
- Meeting–Public ("Open Informational," generic) (3, 10, 23, 24)
- Meeting–Town (New England Model) (2)
- Meeting–Town (Electronic) (2)
- Negotiated Rulemaking (6, 22, 25, 26)
- Neighborhood Planning Council (3)
- Ombudsman (3)
- Open Door Policy (3)
- Open House (2)
- Open Space (1, 2)
- Opinion Metres (2)
- Opinion Polls (2, 10)
- Participatory Appraisal (1)
- Participatory Strategic Planning (1)
- Participatory Theatre (1)
- Planning Balance Sheet (3)
- Planning Cell (27)
- Planning For Real (1, 2)
- Policy Capturing (3)
- Policy Delphi (3)
- Priority Search (2)
- Priority Setting Committee (3)
- Public Hearing (3, 6, 22)
- Public Information Programs (3)
- Publicity (Leaflets, Newsletters, Exhibitions) (2)
- Question and Answer Session (10)
- Random Selected Participation Groups (3)
- Real Time Strategic Change (1)
- (The) Recall (2)
- Referendum (generic; compulsory response) (2, 3, 6, 10)
- Referendum–Petition (2) Referendum–Preferences (Preferendum) (10)
- Roundtable (2)
- Social Audit (1)
- Study Circles (2)
- Surveys (e.g., Community; Tenants' (Service) Satisfaction) (2, 3, 6, 10, 16, 22)
- TalkWorks (1)
- Task Force (3, 28)
- Team Syntegrity (1)
- Tele-Polling (2)
- Tele-Voting (2)
- Time Dollars (1)
- User Management of Services (10)
- Value Analysis (3)
- Visioning Exercises/Conferences (10)
- Workshops (generic, may include: Action Planning; Design; Information Exchange) (1, 2, 3, 29, 30)
- Whole System Development (2)

Source: Rowe and Frewer, 2005, 257

Rowe and Frewer point out there is often uncertain and contradictory nomenclature in the field. Some authors have written about similar mechanisms, using other names; or have using same name for different mechanisms. The mechanisms are numerous and often poorly defined. In this regard, they also discussed the effectiveness; it is about efficiency of retrieving and transferring the information from/to all sources and the combining of this information.

In order to build a typology, they investigated key mechanism variables: participant selection method, facilitation of information elicitation, response mode, information input, medium of information transfer, and facilitation of aggregation. The typology encompasses four classes of communication mechanisms, six of consultation mechanisms and four of participation

mechanisms. The next step would be, according to authors, a theory of "what works best when" – which mechanism is most appropriate for a specific situation. Another possibility would be to establish a typology of contexts.

For example, the *participation* is divided in four classes. They all have open response mode, flexible information input and face-to-face medium of information transfer. The selection of participants in controlled in type 4. The elicitation of information is not facilitated in type 2 and 4. The aggregation isn't structured in type 1 and 2.

Table 3: Participation matrix

	controlled selection	facilitated elicitation	open response mode	flexible information input	face-to-face	structured aggregation	examples
Type 1	+	+	+	+	+	-	*Action planning workshop; Citizens' jury; Consensus conference*
Type 2	+	-	+	+	+	-	*Negotiated rule mode; Task force*
Type 3	+	+	+	+	+	+	*Deliberative opinion poll; Planning cell*
Type 4	-	-	+	+	+	+	*Town meeting (New England model) – with voting*

Source: Adopted from Rowe and Frewer, 2005

Virtual participation

Pantić, Cilliers, Cimadomo, Montaño, Olufemi and Torres Mallma (2021) investigated public participation process in urban planning and spatial development. The authors collected and compared findings on the process before covid-19 epidemics and during it. They addressed potential benefits of the shift from traditional to virtual participation for the future.

Development in the respective countries was quite different, the participation was formalized in Canada already in the 1920s, while some countries did it only in 2000s and 2010s. The position of the consulting phase also differs widely – from obligatory to non-binding and seldom practiced. Commenting the first and final draft is obligatory everywhere. Virtual public

participation nowhere is binding, somewhere, it is partially included in the process but usually only in terms of informing or publishing. In the light of covid-19 pandemics, some online tools were included and became also (partially) legally binding. This was applied on tools like publishing documents on a website, online voting, online meetings, mobile phone applications, submission of remarks by email, simplified procedure to consult planners by phone/mail (Pantić et al., 2021).

The results of the survey were divided in *challenges* to virtual public participation (accessibility, reliability, and trustworthiness), *opportunities* for virtual public participation and *legacy* for post-pandemic times. The researchers identified similar drawbacks for virtual participation compared to traditional forms. They found that through virtual participation, larger number of people and a broader scope of stakeholders can be involved; the environment is more flexible, it can reduce costs. Forms of participation without discussion are especially in the forefront. The digital divide on the other hand, excludes some groups from participation. The authors strongly suggest that lessons learned in the covid-19 pandemics should be integrated in the future by **promoting a combined approach**: technological advances should be included by education of all potential participants would boost the diversity of stakeholders, a precondition for a successful participatory process. They recommend at least one face-to-face meeting, whereby the whole process should pass through several rounds. (Pantić et al., 2021)

3. Participatory design and citizen participation in education

3.1 Participation in education

Eide (1973) discusses the changes and shifts in the educational sector. Firstly, he establishes, no change happens without **the alteration of the power balance** (see Arnstein). Then, he discussed widely the term participation, which he narrowly connects with the decision-making and the control everybody wants to have over his life. As of course, this is mostly not possible, he suggests a substitute for participating through the representation. Inherent to our social systems are hierarchical decision making structures. Therefore, for genuine participation, this is not enough. We strive for personal satisfaction, like rewards, freedom of choice, learning and personal development, emotional interactions with others … This can be done, if we consider different **locations** where decisions are being made.

Eide (1973) enumerates **four conditions for participation,** based on elements as system, institution and individual: (1) institutions must withstand external pressures, which must be enabled by the system itself; (2) the authority at the higher level must not be used to influence the organisation; (3) individual level units are limitedly interdependent; (4) opportunities must be offered to all members; (5) decision must be significant to the individuals or at least potentially controversial. By respecting these, we can avoid predominant forces outside the school, authority spill over from higher levels into autonomous areas, we enhance the mobility within the system… Eide warns, that a higher freedom of choice doesn't inevitably leads to a higher satisfaction. Very similar preconditions as for institutions must be applied to the individual level. In the educational systems, voting with feet as in consumer relationships is usually not easily applicable (see role-oriented model discussed above).

While investigating **location of decision-making**, Eide identifies for areas: experts, schools, local environment and students. (1) Programs are forms of instruction, with specific operational objectives and educational process. The shift to programming gives the main decision power to the *experts*. (2) When schools poses over considerable amount of autonomy, usually the *teachers* are the ones who exert the main decision-making power. (3) When schools strongly rely on the local community, include the members of the local community in their life and share the values with the *local community*, the decision-making lies often with the local community. (4) Eide admits, there are very few examples of real *student* governance, but he points out there are even cases in primary education where pupils could participate in quite far-reaching decisions about their own learning. Eide (1973) states, that the choice is always political, even if it is made by experts.

Eide (1973) clearly believes that a school uses a student as an instrument, 'for their own good'. He believes that there is always a minimal common interest between the parties involved. He sees that also horizontal exploitation is taking place in schools, although it cannot be clearly visible (see Lundy).

Within **participatory planning**, Eide first inspects the role of planning in educational sector. It should poses a certain consistency control (decision and implementation, operations and information, all units among themselves, behaviour with the organization's goals). The planning is monopolized by professional planners, often in a separate unit, which often supports 'political' leadership. All means, used by the planners to include other participants are flawed in a way that they have the only possible reference frame – the one of the planners. So he suggests, planners must "abstain from any formal or real position of prescriptive authority over others within a system" (Eide, 1973, 162) and he compares the role of the planner with the one of the teacher – who "aids the students in their search for their own

solutions to problems" (ibd., teacher as facilitator). Eide sees within the opportunity to develop a socially more valuable planning function, with planning becoming "the essential critical function", needed in our systems. (Eide, 1973, 163)

3.2 Participatory design in education

Introduction

In this section, we took trouble to identify all participatory design (PD) studies in the field of physical learning environment (LE) with brief analysis of research topics, methods and main findings in the studies, and to connect these studies into groups. We followed the methodology, used by Tuhkala (2021) in a similar study. We included studies, published between 2011 and 2021 in six academic search engines and databases. We organized them in three thematic categories, (1) classrooms, (2) buildings and (3) concepts and pedagogy. Studies in *classrooms* are dealing with room-like learning environments, often in preparatory phase as well as in evaluation phase. *Buildings* concentrate on the whole schools and libraries; but there weren't any university buildings. *Concepts and pedagogy* section deals with articles, which weren't so restricted by the type of physical LE. We found out, there are not so many studies for HE sector; there is a lack of longitudinal studies; there is a high diversity of tools and methods of participatory design; students are not always in the central role, but they assume different positions according to the number of shareholders.

The vast majority of studies was located in Western Europe or in other developed countries in the world, only three of them were from other parts of the world (Brazil, Iran, Lithuania). UK and Sweden are leading the way. The articles about British schools and classrooms are

referring to the Building Schools for the Future (BSF) programme (Könnings et al., 2017). The Swedish researches are based on the constant interest of the Scandinavian architecture and policy for schools. So it is not a surprise, that also neighbouring countries as Finland, Denmark and Netherlands are fairly represented.

Table 4: Studies according to location

Country	Number of studies
Australia	2 + 1 (with UK)
Belgium	1
Brazil	1
Denmark	2 + 1 (with Sweden)
Spain	1 (with Finland)
Finland	1 + 1 (with Spain)
Iran	1
Italy	1
Lithuania	1
Netherlands	2 + 1 (with UK)
New Zealand	1
Sweden	4 + 1 (with Denmark)
UK	4 + 2 (with Australia/Netherlands)
Together	21 + 4 (with two countries)

Source: Author

In the process of determining a sensible typology, we tested following characteristics: research topics, methods, findings, stakeholders. Within the research topics, we followed Tuhkala (2021) who divided environments in school buildings and technology-enhanced learning spaces. Later, it turned out, the environments can be divided according the range of the transformation (whole building or classroom(s) only). The budget and the depth of the transformation revealed to be quite closely connected with the previous divide; besides, it couldn't be established always. Within methodology, we encountered numerous different methods of approach. Mainly, the studies can be divided into two large groups if they dealt

with cases, either were they post-occupancy evaluations or pre-occupancy evaluations. If dealing with participatory design, we would of course expect to deal mostly with planning of the change and then only partially deal with the evaluation.

The table below (Table 5) shows how the criterion planning/evaluating intersects with the focus on the whole building or part of the building. Many researchers complained about letting out users of school buildings in the preparatory phase of refurbishing, renovation or new construction of the school building. Renovating a classroom or a part of it is easily to include in the both phases, with the new building, participatory design thinking arrives often when the building is finished – like the case of thought experiment in Koutamanis et al. (2017). Studies, which included the building as well as the classroom, are mostly quite general and usually focusing on pedagogy and pedagogical transition. This is also true for two studies with no specific focus in the built learning environment – one is concerned with the schoolyard, which is often neglected also in the terms of place of instruction and social life (Nekrosius, Ruseckaite and Riaubiene, 2018).

Table 5: Studies according to the type of LE and the phase of transition

Type of LE//Phase	Building	Classroom	Building and classroom	Not applicable
Planing	1	3	1	
Evaluating	5	3	1	1
Planing and evaluating	2	5	2	1

Source: Author

Since the project Creative Repurposing of Educational Spaces for Innovative Student-centred Environments (CREST) focuses of higher education sector, it is evident that only a small part of the studies deals with the higher education which is again a reminder how neglected this educational sector is – and even if we follow the assumption that HE students are easier to include in participatory design process than primary school children.

According to Table 5, we have 25 studies, divided into sections Building, Classroom, Building and classroom and Not applicable. We will merge the last two sections. According to our project (CREST), we are most interested in classrooms, since we expect the changes in participating HE institutions will set in with the classroom rather than with the building (10 studies). In the third section, dealing with both scopes and where the scopes are not defined, we believe to find more participatory design oriented or pedagogy oriented approach (7 studies). The rest, dealing with buildings, will serve us as a vision of possible development (8 studies).

Classrooms

The word classroom, in our case, encompasses different single rooms in the educational settings opposed to the building (school etc.) as a whole. It can be an actual classroom, or a studio, a laboratory, a workshop, even a library or a gathering place. In general, our project deals with the adult young people, the studies below are mostly dealing with the primary or secondary schools. This can alleviate the process for us to a certain degree; but mass HE institutions are not always developing cordial relationships with their students as this is the case in primary and secondary education. The participants in classrooms can assume

ownership sooner than in other parts of the educational premises but it is significant whether the students are commuting from classroom to classroom during the day or not.

First, we wold like to stress the meaning of three studies dealing with participatory design in higher education.

The first one, Casanova et al. (2020), wants to connect technology with physical learning environment to **technology enhanced learning environment**. Participants, teachers and students, in separated groups, were redesigning their lecture rooms and seminar rooms regarding the furniture, seating opportunities and technology devices. They used *sandpits,* creative, design-thinking, one-hour workshops started with storytelling technique, followed by discussion and redesign; each *sandpit* had a different scenario. The starting points were two learning environments, the large one, called *Cube*, and the small one, *Poppy flower*. Blue-sky thinking approach resulted in findings, merged in three main themes: visualisation (communication besides speaking-listening channel), personal mobile devices and how technology can be used to support student participation in the lecture.

The second study, Marshalsey and Sclater (2018), involves students of practice based design disciplines while redesigning their studios. It deals with two cases, a conventional studio environment and a studio-based blended classroom environment. In the centre of the study is the notion of *sensory affect*, a form of feedback, through which students can analyse how the learning environment influence them. They employed visual, sound and sensory ethnographic methods, in order to qualitatively reflect about their learning spaces and use this experience more explicitly for their work. The third study, Sandbach (2011), is another study dealing with students of practice based design disciplines. It describes a process of place-making, building a community around the common place while redesigning it; being socially

responsible, co-designing it, and meeting the call for sustainability. With the help of graphic design, they aimed to make an inspirational place.

The study Bøjer (2019) deals with the lower secondary students. In the centre of the case study, there are two pieces of furniture, special designed co-creation cabinets, over which they tested if design after design can handle the transition into a new learning space. It raises spatial awareness and enables match of pedagogical practices with spatial affordances.

Hughes et al. (2015) examined seven school libraries through the lenses of 'built pedagogy'. In the process of development, student voice was often limited or overlooked. The authors gave **recommendations on collaborative designing approach**.

1. Identify the full range of stakeholders, like principal, teachers, teacher-librarians, teacher aides, students, parents, janitors and community groups, special attention goes to daily users.

2. Consult all stakeholders as early, often and widely as possible, to avoid misconceptions and costly errors.

3. Allow time for collaborative relationships to develop and conceptual understandings about the space to emerge before embarking on major planning or contractual decisions.

4. Seize opportunities to learn and build on previous experience.

5. Schedule regular opportunities for all stakeholders, including design/construction professionals and intended users of the space, to collectively imagine and reimagine the space and its potential (e.g. collaborative design workshop).

6. Take advantage of the transition phase for community-building activities, such as collaboratively setting up and then launching the new space. (Hughes et al., 2015, 332)

Sarmento, Gomes and Moreira (2018) performed a research with students only about how to adapt classrooms for hybrid models of learning environment (LE) and developed set of guidelines for this transformation.

Mäkelä et al. (2018) conducted a research while developing participatory design project in a secondary school with the aim **redesigning a natural science classroom and a hallway corner**. They included LED framework, developed couple of years earlier (see Figure 6) and maintained it with an elaborate survey among the student participants.

1. They included 11 students in co-design activities, which was in a form of a 38-hours elective co-design course. This involved visiting recently (re)designed nearby schools, meeting with an interior designer, and using a blog for sharing and co-creating ideas. The final product was to make models, sketches, plans etc. for the redesign.

2. The products from the previous phase were exhibited. Student gave feedback on the plans (175 of them).

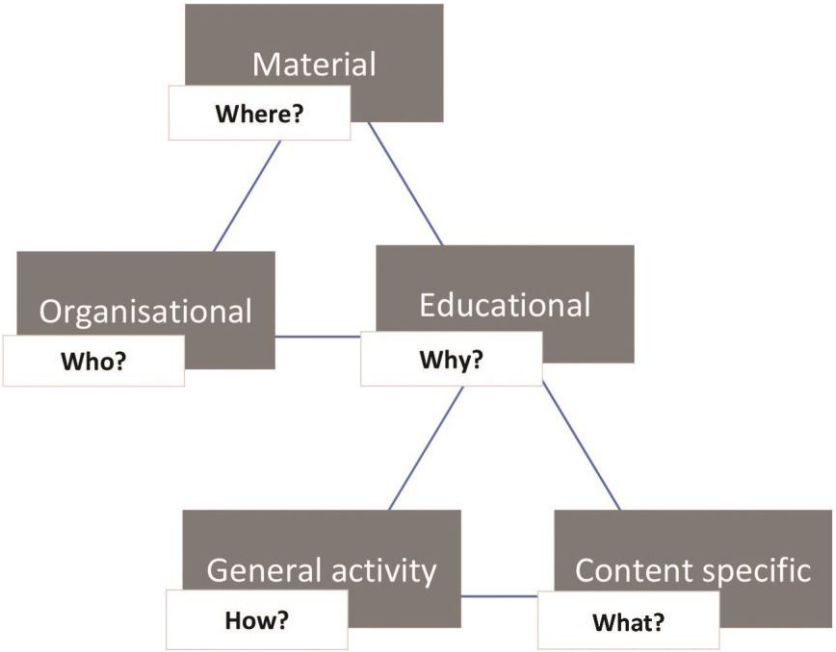
3. Professional design evaluation was meant to be assisted by the professional designer. Some of the students from the first phase have participated and have evaluated how their ideas were incorporated in the design.

4. Student satisfaction survey (83 respondent) was made after the introduction of the redesign.

The study Frelin and Grannäs (2020) is a case study, focusing on educational and organisational affordances of teachers. The core activity of the study is transformation of the auditorium into a multi-zone flexible learning environment with several types of furniture and seating features. Schoolteachers were invited to make a pre-occupancy evaluation, one virtual and one on site. Analytical model illustrating teachers' evaluations of the affordances in the learning environment – TEALE (Figure 4). The findings can be used to improve understanding of **how teachers see participatory design processes**. They see, that there are several stakeholders in more than one phase of the process. A pedagogical perspective was included

in key points of the process. The preparation must support introduction of a new pedagogy. This process takes more time than the change in the building itself whereby the economically robustness must be taken into account.

Figure 4: Teachers' evaluations of the affordances in learning environments (TEALE)



Source: Frelin and Grannäs (2020)

Also, the study from Janssen, Könings and Merriënboer (2017) concentrates on **teachers, their teaching patterns, beliefs and pedagogy**. In order to ensure smooth participatory design process, the authors proposed tools about what, how and why to teach (the laddering tool; the building block tool). The answers offer a first step for design of supportive physical classroom environments. A case from biology teaching.

Authors Rönnlund, Bergström and Tieva (2021) examined, how three teachers started pedagogical change with redesigning a classroom and failed. The research focused on learning environment factors (Actor Network Theory) and listed **advantages**— increased intensity in

students' collaborative work, and student-student communication and interaction – **and challenges** — difficulties in keeping the students on-track for longer periods of time, and in catching up with the syllabus.

The research from Tondeur et al. (2017) concentrated on the teachers' active engagement and ownership within their respective classroom landscapes. They examined classroom biographies of several teachers through an ecological approach and found out schools/classrooms should be/are permanently in the making. This is not a classical participatory design, but it points out how teachers and pupils interact with the classroom.

Concepts and pedagogy

In this section, we deal with the articles that are not space specific or include both buildings and classrooms. Interestingly, among the stakeholders, there are mostly students as well as teachers. Grannäs and Stavem (2021) conducted a case study about **affordance and mismatch between architecture and pedagogical approach** which results in closing once open classrooms in a particular school.

Van Merriënboer et al. (2017) examined how to bring pedagogy and physical learning environment together and developed three steps approach: 1) specifying the pedagogy, (2) aligning the pedagogy with seating arrangements and physical learning spaces, and (3) realizing the school building (Table 6). They exemplified the process, based on participatory design, with two cases.

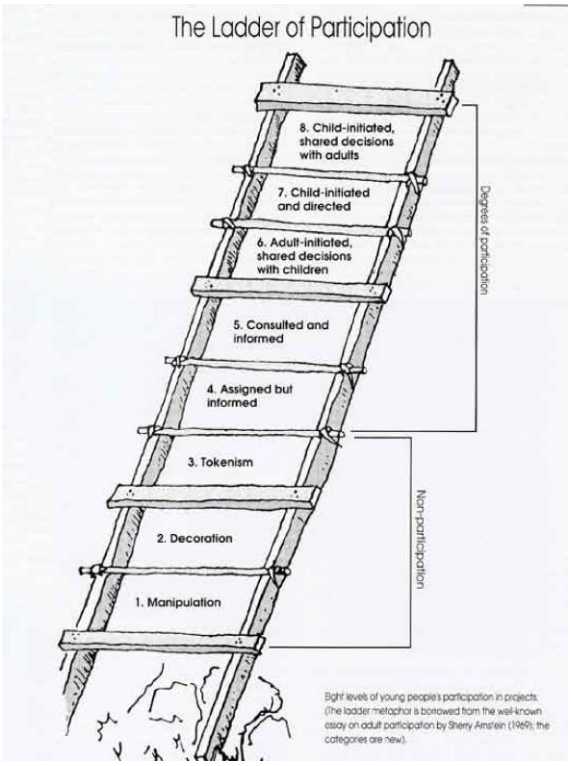
Table 6: Key elements in three-phase participatory design by Van Merriënboer et al.

	Key processes	Participatory notes
1: Specifying the pedagogy	Design learning tasks Identify supportive information Identify procedural information Create part-task practice scenarios	School management and instructional designers work with school leaders, teachers, students and possibly parents
2: Seating arrangements and physical spaces	Envision enactment of the pedagogy Derive space requirements Attend to: – comfort – health – communality-individuality balance – novelty-conventionality balance	Educators and students work with architects, interior designers, ICT specialists and educational publishers
3: Realising the school building	Monitor detail decisions or changes	Architects, interior designers, educational publishers and ICT specialists collaborate, educators and students monitor

Source: Van Merriënboer et al. (2017)

Since space is given meaning by its occupants, children, teachers and parents must be included in school planning. Rigolon (2015) examines children's participation models by Sutton and Kemp, and Hart, especially the ladder of participation of the latter. Rigolon advocates the "unfinished spaces" where children are allowed to give them meaning in an active way.

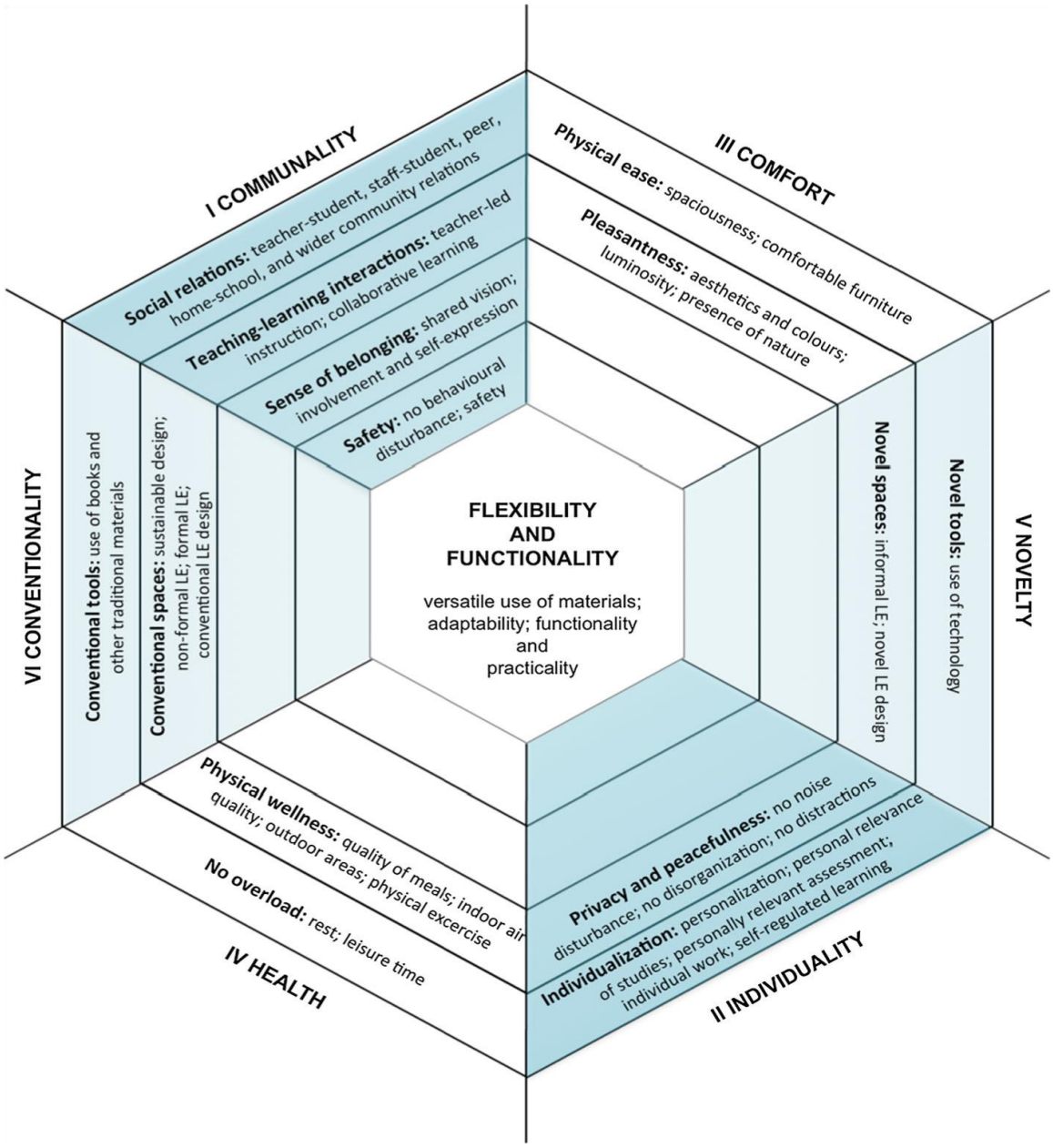
Figure 5: The ladder of participation by Hart



Source: Hart (1992)

The study from Mäkelä and Helfenstein (2016) has developed **a learning environment design framework**, based on two educational design research studies, concentrating on students. The LED framework combines communality with individuality, comfort with health, and novelty with conventionality (Figure 6). They geared the framework with **useful material package, with questionnaires and workshop descriptions**.

Figure 6: Visualised LED framework for guiding co-designing learning environments



Source: Mäkelä and Helfenstein (2016)

The framework brings together and structures LE characteristics supportive to learning and wellbeing. It can be used as a guide in planning, gathering information, classifying data and structuring the evaluation of individual co-design projects. While investigating the reactions

of different stakeholders, the authors find out the pupils emphasised the physical LE dimension, the parents stressed the social and psychological dimensions, and the teachers concentrated on the pedagogical dimension.

The axis of communality and individuality is enabled by socialising and collaborative work on the one hand, and privacy and individual work on the other hand; teacher-led activities combine self-regulated and personally-relevant learning situations. The shared vision is important, but it mustn't neglect differing views and personal preferences; the school should be open to the wider community, but LE must be safe and distraction-free. The axis of comfort and health is characterized by comfortable and spacious environments for learners to feel at ease physically, as well as environments, which promote physical wellness; pleasant spaces with elements of nature, time and spaces for leisure and rest.

The axis novelty–conventionality in the LE is designated by modern tools and spaces, and informal LE. They are combined with conventional tools and spaces, appropriate for formal or non-formal learning.

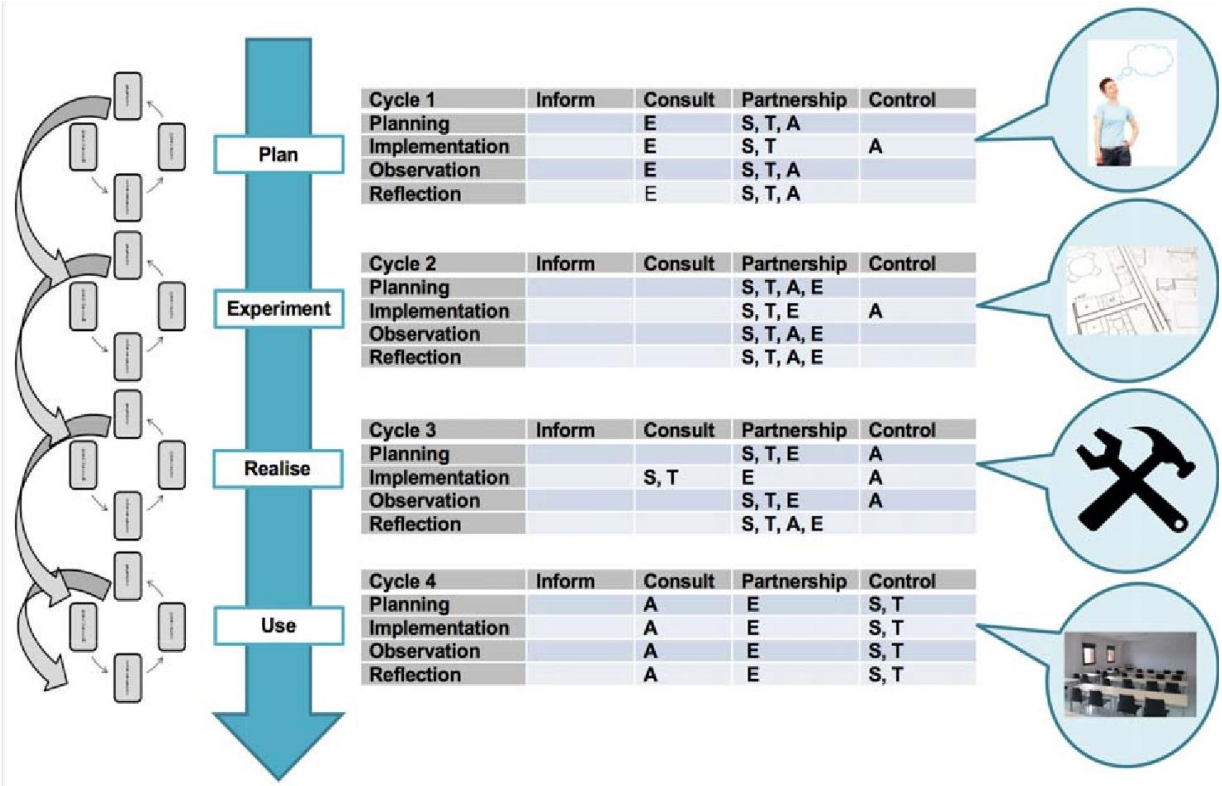
LE should be functional, flexible, for easy use, and modifying to react to change in needs and requirements (Mäkelä and Helfenstein, 2016, 436.)

Nekrosius, Ruseckaite and Riaubiene (2018) focused on schoolyard in historical perspective and argued for the development of a polyfunctional schoolyard, as results of experimental practices on participatory design and community engagement have shown.

The authors of the study, Könings, Bovil and Woolner (2017), focused on **how to include all relevant stakeholders in the complex design process of educational environment** and tested their ideas with groups of architect, educational designers, teachers and students. They scrutinized the tools as action research cycle, stakeholder analysis model, ladder of participation tool (after Arnstein), and participation matrix. The result is an interdisciplinary

model, which bears an iterative design process with different stakeholders at different times, useful for building design as well as for learning and teaching (Figure 7). Action research cycle[13] has stages planning goals, implementation, observation and reflection. Participatory process and expectation of working towards change are inherent to this model. Stakeholder analysis is used to consider carefully who should be involved. Groups are formed according to the influence (low/high) or importance (low/high). For example, students have low influence but high importance, while architects have high importance and influence. Participation matrix combines ladder of participation (here levels of involvement inform, consult, partnership, control) and action research stage. In Figure 7, you see the merger of all dimensions.

Figure 7: Interdisciplinary model of participatory building design



[13] Zuber-Skerritt, Ortrun. (1992). Action Research in Higher Education—Examples and Reflections. http://lst-iiep.iiep-unesco.org/cgi-bin/wwwi32.exe/[in=epidoc1.in]/?t2000=006421/(100).

Note. S – Students; T – Teachers; A – Architect; E – Educationalists
Source: Könings, Bovil and Woolner (2017)

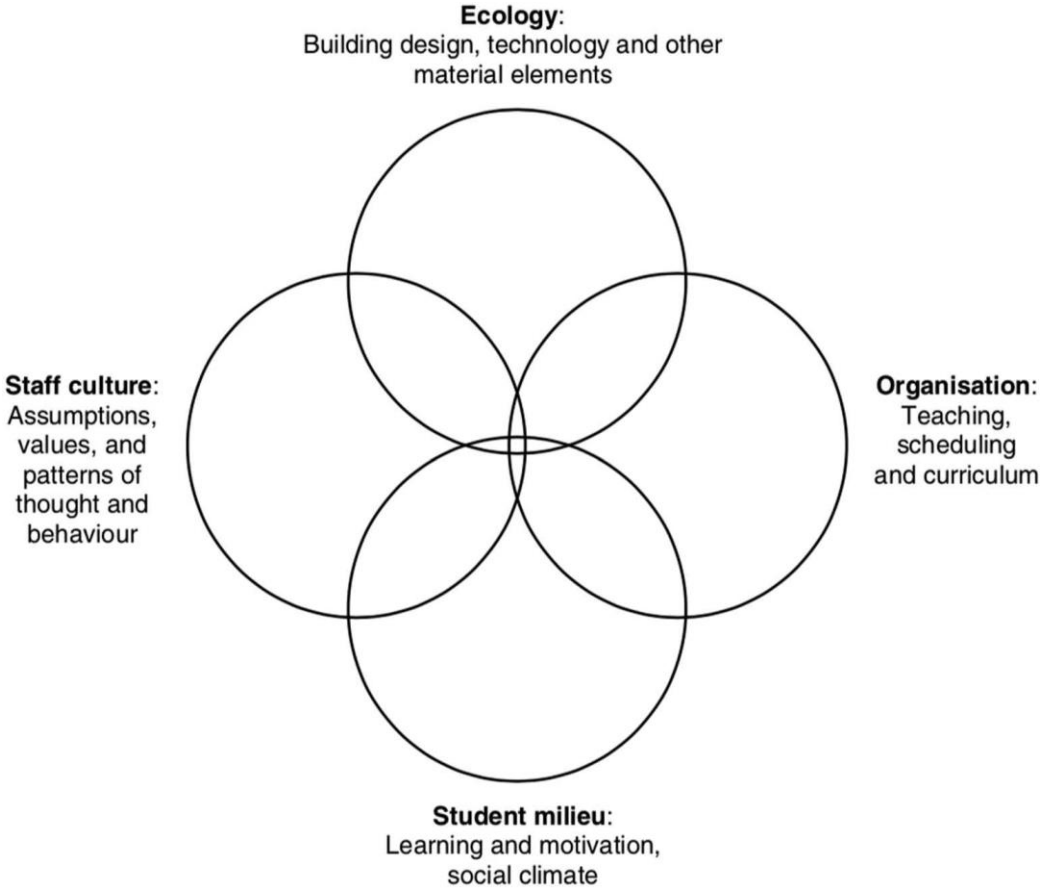
Buildings

In this section, we are examining studies dealing with the participatory design and educational buildings as a whole. It is indicative that almost all of them deal with the evaluation and only one is strictly planning oriented. This suggest that big changes, supported with high budgets, usually avoid researchers' attention in the planning phase – for unknown reasons. The changes, thematised in the studies below, are not in the centre of our project's concern, but they might bear some interesting insights for applying participatory design while redesigning learning environments.

In his study, Benade (2021) examines the parental or community involvement in the design process of a school, with the underlying assumption that **community participation** doesn't bring any advantages if not carefully prepared. The author includes analysis of literature, policy and media articles; a limited parent questionnaire and semi-structured interviews of purposively identified participants.

In the study from Cardellino and Woolner (2020), the researchers, follow the question how design affects the pedagogy (case of open-plan schools) and what are the limitation of design for educational transformation of learning environments if not in balance with the educational agenda. Despite the voices against participatory design while planning, the authors believe the successful participatory design process enabled the educational transformation. In order to establish this conclusion, they used **a school climate model** (see Figure 8).

Figure 8: School climate model adapted from Gislason (2010).



Source: Cardellino and Woolner (2020)

Mediaspace, a shared building for the municipal library, was in the centre of interest by Dalsgaard (2012), where citizens' involvement in a series of workshops was at a stake. This huge project included a large number of participatory initiatives with **different PD techniques** as inspiration card workshops; "living blueprints" technique; the Transformation Lab project initiative. By doing so, the project was addressing heterogeneous stakeholders and establishing participation as a relevant activity, developing techniques and technologies to scaffold participation, and iterative development and institutional transformation

One of the rare studies concerned with both planning and evaluation, was the one from Frelin and Grannäs (2021). It deals with two case schools with many stakeholders, where each year its own **team learning environment (TeLE)** for up to 90 pupils was raised. Not the whole

building but the transformation of a group of rooms was thematised. The authors focused also on economically robustness of new team learning environments.

The authors Koutamanis, Heuer and Könings (2017) used a visual information technology tool – Building Information Modelling (BIM) and conducted a taught experiment in a case school in order to find out would be there another outcome if it would be used already in the planning. With comparison of participatory design project and the potential application of BIM, this tool would have been of added value.

In their evaluation study, Leiringer and Cardellino (2011) have examined multiple schools to find out, there must be **balance between good design, commercial realities and educational approaches.** A good approach to finding the balance was seen in participatory design where values and learning intentions of the schools can be meaningfully incorporated.

Mokhtarmanesh and Ghomeishi (2019) addressed primary school students with a card sorting technique followed by semi-structured interviews to test effects of the environment on users in determining their preferences for school.

Woolner et al. (2012) have included only students in their study which is characterized by placement between planning and evaluation. It is about "**experimental week**" of enquiry learning in an existing large space to test a pedagogy change before relocation to a new school. The design of the new school happened with minimal involvement of staff or students but there was a desire to prepare them for the changed environment. The "experimental week" tested use of space and the organization of learning time; other aims were to develop a shared understanding among staff and students of what learning is; to include the less enthusiastic teachers, integrate the perspectives of non-teaching staff and, vitally, facilitate the involvement of the rest of the student body, including the "troublesome" students.

Discussion

The most striking insight was there are not so many studies in the field of higher education. This can be justified by many reasons: higher education is not compulsory, students are more adaptable, well-being of the participants is not in the front, more public funding goes to primary and secondary education. However, dealing with young adults also means, they can participate in very intensive way (like sharing decision-making with adults). Participatory design in HE institutions can be a great opportunity to involve young people in the educational process, to motivate them and to attach them to the learning; in longer term, it can raise their civic involvement altogether.

Another insight can be shared with Tuhkala (2021). There are very few or even none longitudinal studies. This can distort our vision and evaluation of participatory design process, since it builds on the very positive feeling we usually have at the end of a successful process; but it neglects the fact, the now redesigned classrooms and buildings in which students and teachers continue to learn and teach, need to be adapted to their needs also in the future; or the participants themselves need to be reminded what they agreed upon while redesigning. Some studies are explicitly warning, not everybody is eager to change, and have shown how a good implementation of a proposal needs also a good follow-up.

Third insight goes to tools and methods of participatory design which doesn't have an exact methodology and set of tools. We could see **number of different tools** in this studies which were used in very different ways. Casanova et al. (2020) used *sandpits,* one hour workshops, with storytelling technique, discussion and redesign; Bøjer (2019) put special designed co-creation cabinets in the classroom; Sarmento, Gomes and Moreira (2018) developed hybrid models of learning environment (LE) and set of guidelines for it; similarly, Mäkelä and Helfenstein (2016) elaborated a very useful LED framework; Frelin and Grannäs

(2020) did a pre-occupancy evaluation, one virtual and one on site; Janssen, Könings and Merriënboer (2017) used the laddering tool and the building block tool, useful especially for teachers; Rönnlund, Bergström and Tieva (2021) followed the Actor Network Theory; Könings, Bovil and Woolner (2017) merged tools as action research cycle, stakeholder analysis model, ladder of participation tool, and participation matrix in their model; Dalsgaard (2012) wrote about PD techniques as inspiration card workshops; "living blueprints" technique; the Transformation Lab project initiative; Mokhtarmanesh and Ghomeishi (2019) employed a card sorting technique; Koutamanis, Heuer and Könings (2017) used a visual information technology tool – Building Information Modelling (BIM).

Regarding the stakeholders, we are especially interested in students. This stakeholders' group wasn't included in those studies which were fairly general or they included teachers only. Two constellations were equally represented: either were teachers and students (and sometimes parents) on the same side, facing architects, educators, authorities, management on the other; or was it about the relationship students vs. teachers, both groups having the status of users of physical learning environments. When dealing with classrooms, the latter was often the case, when dealing with buildings, the former prevailed.

For our project, we found the most useful approaches in the Mäkelä and Helfenstein (2016) and in Könings, Bovil and Woolner (2017), both in the section *Concepts and pedagogy.* The first study shows us a realm of LE features, sensibly structured, which is underpinned by a workshop and questionnaires. Another study from the same two authors two years later shows us how the LED framework was used in practice. Big impression made also the second study by Könings, Bovil and Woolner (2017) where several tools captured a complex process of redesign together; on the other side, the concept doesn't appear to be overloaded. Also Van Merriënboer et al. (2017) delivers an interesting approach, staring with fixing a pedagogy.

As we are experiencing it here and later, this is a very common approach. It can be also a point where students and teachers adopt different point of views. Könings, Bovil and Woolner (2017) see that a lot has been done in creating innovative curricula, even with students in a collaborative way – but this is not the case in every part of the world. They blame especially architects who construct new buildings on a basis of outdated learning concepts. They share the vision with many other authors in this section that this can be overcame by involving different stakeholders.

Most of the authors don't hesitate to warn that it takes time/money to run the process but this can be cheaper as develop solutions not fit for the users. Yet the wide range of stakeholders – school management, designers – instructional, inner, architects, school leaders, teachers, educationalists, students, parents, ICT-specialists, educational publishers – must be handled with precaution. Many authors point out that after a classroom or a building is implemented, the process isn't over. This is especially visible in the cases from 1970s where changes in LE were implemented without much participation of other stakeholders. However, they also discourage of using incrementalism as a way of developing learning environment. The most common finding is, however, that the change in LE affects also other areas like pedagogy, technology, school culture, or even collaborative skills, lifelong learning attitudes and participation in society of the students. Positively or negatively, if not done in a proper way.

3.3 Redesign of higher education learning environment

In this section, we are dealing with redesign of higher education LE. The studies here weren't collected in a way as in the previous one. The studies are sometimes only implicitly related to

participatory design or they emphasize the teacher's role and include students only marginally. Despite this drawbacks, we find it useful to include them as they are adding some insights to the conclusions from the previous section. This is especially the case in the Pedagogy-Space-Technology Framework (PST).

Design of learning spaces

The traditional division of learning spaces at the university finds auditorium, classroom, library and laboratories (Stöckert, Van Der Zanden, Peberdy, 2019). Classrooms were organized in a way to maintain control and silence, in the 20th century sloped floors and bleacher-style seating was introduced with similar desires (Salama, 2011). The traditional classroom setting is connected with factory-style learning and is not viable for learner centred instruction in an environment that is technology and information rich (Penrod, 2021). The pedagogy usually was teacher-centred. On a way to student-centred/active learning the perception of learning spaces has altered in a way, that also home, café, campus or anywhere between physical spaces can be a learning space. Places are either physical or virtual. This influences the prerequisites for today's learning spaces – they are flexible, appropriate for formal and informal learning and interrelated, they include different pedagogies, and technologies, and have the permanent potential to be hybrid. "The design of a learning space is not a product, but a process". (Stöckert, Van Der Zanden, Peberdy, 384).

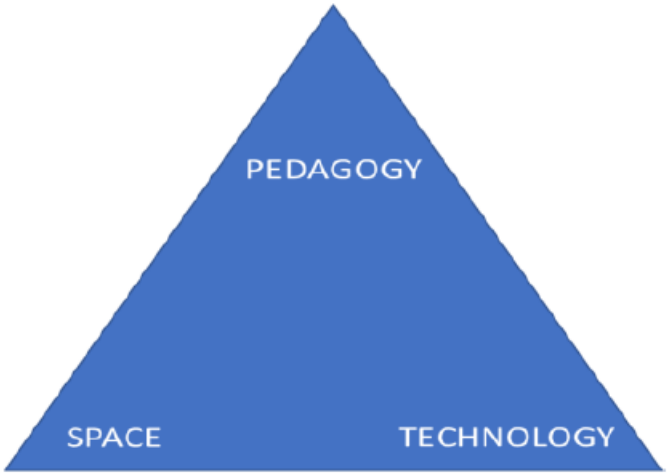
For today's education rooms, a **variety of methods** is characteristic: traditional teaching in front of the whole class, group or work in pairs, and reflective individual work. Therefore, school teaching and learning rooms must be extremely flexible. Schlenker and Neuburg (2022) claim, this is a big difference from the concept of open teaching in the 1990s. Since 1960s and

1970s, the discussion on build classroom as a third teacher has emerged. After 2000s, a progressive introduction of digital technology in school is taking place.

Salama (2011, 36) finds, the saying "A good teacher can teach everywhere" isn't valid any more. He is referring to the need to provide students and teachers with feelings of hospitality, welcoming and safety. There is not enough attention put on the process that leads to the learning environment – pedagogical objectives, teaching methods and needs of learners are oversimplified. The learning environment affects learning in a positive or negative way. Emergence of mega schools could be cost effective, but they appear to be boosting irresponsibility, meaningful engagement and students' misconduct. He briefly discusses the role of the school as a community hub, where the school can be amended by adult educational classes, job-training centre, social services, community clinics and general facilities for the community.

Stöckert, Van Der Zanden, Peberdy (2019) help us to understand learning environment by introducing the Pedagogy-Space-Technology Framework (PST). This robust framework serves for the whole lifecycle of the learning space: concept, design, construction and training, occupation, and adaptation and modification.

Figure 9: The Pedagogy–Space–Technology Framework



Source: Stöckert, Van Der Zanden, Peberdy (2019, 384)

Approaches to redesign

Blackmore and O'Mara (2022) investigated a dozen of Australian schools, which developed innovative learning environment by fully or partly rebuilding their premises. Schools went into redesign for different **reasons**. For one part the reasons were on a national or even global level (drive for market oriented public system in the past, global financial crisis); for the other part they were in the local community (urbanisation and higher enrolment numbers, or poor social and learning outcomes), or even in the school itself (lower student satisfaction, dropout). The schools also got funded for the redesign of built environment from different sources, depending on their status and local community.

Stöckert, Van Der Zanden, Peberdy (2019) propose a following **holistic approach**: (1) covering the basic needs (+ Wi-Fi, clean toilets), (2) solution testing with all stakeholders, (3) designing the learning space according to pedagogy and THEN to include technology and teaching, (4) passing the effort to interdisciplinary and leadership levels, (5) creating an iterative process including PST-framework to identify barriers.

Salama (2011) also discusses different approaches to creating learning environments. **Top-down approach**, initiated by decision-makers, is often in the form of guidance documents, typically introducing technical measures and recommendations, usually rough and quantitative oriented, generic, not addressing specific context or user group. The guidelines are to be strategically developed by responding to needs and nature of users. **Bottom-up**[14] approach refers to the initiatives of the community (users) and then dealt by the professionals. It is more evaluative and aims at developing of common understanding, users' awareness and

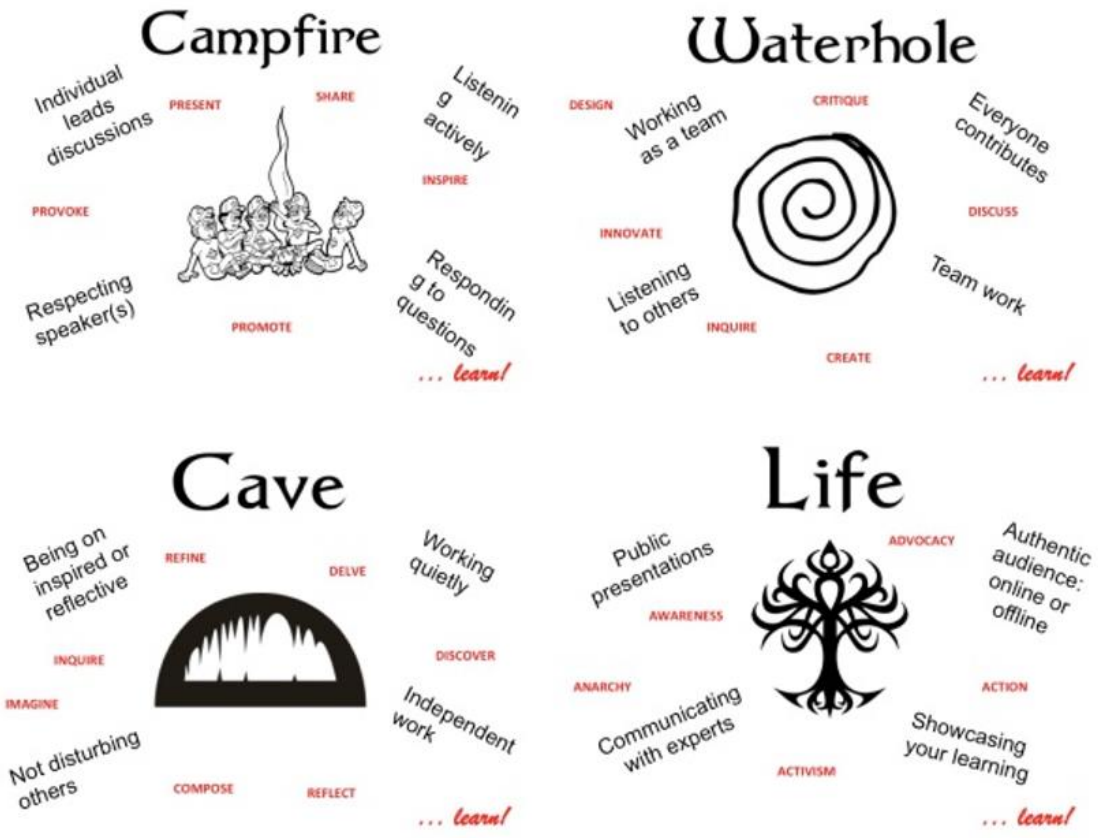
[14] Our project encourages this approach.

involvement; it is often time consuming. This approach is often oversimplified or ignored, but it is as important as the top-down one and cannot be replaced.

Stöckert, Van Der Zanden and Peberdy (2019) based their approach on Thornburg (2007). The philosophy behind the metaphors of campfire is aiming at mythical approaches to knowledge, still in use today when learning is becoming more internet-driven. Thornburg identifies four archetypic forms of learning: campfire, watering hole, cave and life. The first one, *campfire*, resembles the story-telling urge of a human who passes the knowledge to others. In the past, this was a shaman, a bard, a troubadour, today a teacher, an expert. The second one, *watering hole*, resembles peer learning. It enables an informal exchange of information: rumours, gossip, news, dreams, discoveries… The individual is a learner and a teacher at the same time. Today, this can be a water cooler, a copying machine, a schoolyard; some kind of watering hole was also brought back to the classroom in the form of cooperative learning. The *cave* stands for individual learning, building on the experience of American indigenous people, where the knowledge transforms from externally accepted to internally held belief. It is everywhere where an individual can enjoy a quiet moment and comes in contact with itself. *Life,* as the fourth form, addresses the application of knowledge. Not putting things in practice means to learn only halfway. Thornburg distinguishes between “just in case” and “just in time” knowledge, the first one being without application. As the title of his article indicates, it is about the forms of these four learning metaphors in the cyberspace. Thornburg strongly favours interactivity of the new multimedia whereby he sees the main feature in the capacity to branch to different scenarios and believes this can be found under the label of problem-based learning (see section 1.2).

Thornburg (2004; 2007) can be put on the beginning of our reflection of different types of learning environment. Based on his metaphors of learning, Hewes (2012) passed on another implementation of flexible learning environment to us, which is far more based on the teacher's motivation. Many teachers do not have their own home room, they don't have permanent furniture arrangement. Despite, she advocates arranging and rearranging the furniture every lesson and during the lesson. In the process, a thinking culture is created where students, with metaphors, develop metacognition and, gradually, learning autonomy. She points out, that the introduction of mobile digital technologies in the classrooms must go along with the change of the physical learning environment. It is possible to use just one flexible online tool or many of them to facilitate shifting from virtual to physical. Hewes (2012) sees the learning landscape should be changing in a way that it can be used with or without modern technology, but is should be always more flexible and student-centred/learning-focused.

Figure 10: Posters on different metaphors for learning



Source: Hewes (2013)

In the example of a new campus in Trondheim, a balance between different types of learning was envisaged. They pursued goals of active learning, places to work before and after lecture, variation of learning spaces/arenas, flexibility to support different types of learning activities within the same space/timeframe. (Stöckert, Van Der Zanden, Peberdy, 2019, 385). They followed different **learning scenarios**, based on Thornburg's metaphors for learning: campfire (mostly frontal), cave (for individual learning), waterhole (for peer learning) and life (using knowledge, see Thornburg, 2007). The resulting distribution, density and organisation allows every student to find their own place, which enables them to develop the sense of ownership and belonging. But first, the places had to cover the basic needs: clean rooms, good lights, acoustics, air, furniture, Wi-Fi, and coffee (sic!). (Stöckert, Van Der Zanden, Peberdy, 2019)

Blackmore and O'Mara (2022) state that redesign considers **spatial, temporal, cultural, structural, communicative, social and semiotic practices**, which are to be addressed if the change would be seriously taken. The change in the *spatial practices* ranges from almost entire rebuild of the school and new open plan buildings to renovation of semi-open plan spaces. Some focused also on community renewal, with a laundry, a coffee shop and community garden. In one case, it was just about removing existing internal walls. *Temporal practices* included longer periods, more time for teachers and principals to work together, for professional learning, planning and student-centred discussions. *Communication and semiotic practices* are related to the ways of sharing experiences, planning the usage of spaces, cross-disciplinary discussions. This often evokes the culture of shared ownership and openness. The principals' communication is often less directive. The teacher-student communication can also change or improve. A shift in mobile technologies lessened the need for computer rooms. (Blackmore and O'Mara, 2022)

Haines and Maurice-Takerei (2019) believe the new generation of learning spaces is still in a phase of experimentation. They are using the term "collaborative learning spaces". They admit the investment is financially large and there is a lack of evidence.[15] In the institution, the authors refer to Carr and Fraser[16] who identified four organizational factors: (1) institutional policies, structures and systems, (2) built environment, (3) communities of practice, (4) signature pedagogies.

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[15] Walker, J.D., Brooks, D.C., and Baepler, P. (2011). Pedagogy and Space: Empirical Research on New Learning Environments. Educause Quarterly, 34.

[16] Carr, N., and Fraser, K. (2014). Factors that shape pedagogical practices in next generation learning spaces. In K. Fraser (Ed.), The future of learning and teaching in next generation learning spaces (Vol. 12). Bingley, UK: International Perspectives on Higher Education Research, Emerald.

In a specific institution where Haines and Maurice-Takerei (2019) did the research, they set up **two prototype classrooms**. The premise was that active learning happens through interaction in group work on common tasks. All furniture was on wheels to be more flexible. Seating arrangement was around square or hexagonal desks. The advisory team launched community of practice for teaches, started workshops for them and identified appropriate pedagogical practices.

The role of **the school culture** and its dynamics is very important but often neglected factor. It is highly complex and it bears features of physical and social context, of history and the management style. The users expectations are crucial also here – what should happen, how to comprehend the environment, reactions and the accommodation of (educational) beliefs to it, what is the role of learning environment in their teaching or learning. (Salama, 2011, 38)

Participatory design as part of redesign

The motivation behind participatory process is to have those "who actually dwell in the space be part of the process" (Salama, 2011, 37). This is an **intensive and collaborative process**, which often starts with interviews and walkthrough evaluation of the existing facilities. Then the initial workshop follows, with participants working in small groups and producing e. g. poems with their wishes. Special workshops for children are letting them to voice their opinions. The design team is set, made of teachers and administrators, to discuss pedagogy and spaces. They are followed by design workshops and site walkthrough. After that, consensus can be reached about the future evolvement. (Salama, 2011, 37)

Salama (2011) carried out two studies to underpin his idea that different user groups see different solutions as most appropriate. The **classroom arrangement rating scale** was introduced, where teachers of three elementary schools expressed their preferences about

six classroom prototypes and five classroom cluster arrangements. Another case study was carried out inspecting a collaborative pre-design process as part of renovating, remodelling and redesigning new school buildings at a specific school of arts in North Carolina. One session was tackling students' reactions to classroom and cluster prototypes (as above), another session dealt with preferences of the image of a dance studio and the connecting breezeway. The findings revealed that elementary teachers chose different classroom types. Another important finding was that students partially prefer other types than teachers. Teachers involved their experience and views on education when choosing a specific type. Students often reacted out of dissatisfaction with their present environment. (Salama, 2011, 41)

An approach, dealing with **the whole university**, was used at the Delft University of Technology. Their starting point were the increasing numbers of students and the change in technology and pedagogy. With over 300 learning spaces, they went through an implicitly participatory process where they identified about 180 places, and then they had them uniformly equipped according to type of use, centrally timetabled and maintained, and offered to the teachers. (Stöckert, Van Der Zanden, Peberdy, 2019)

They developed a long-term program to adapt places to a certain standard and established a governance model. This included, besides introducing all stakeholders, identifying places, fundraising, organizing governance over the places, also arranging informal study places together with the students and training teachers for the usage of the new places and equipment. They differentiated **four main pedagogical practices**, frontal teaching, mixed practice (student-centred, with frontal intro and working in groups), collaborating (often as a flipped classroom) and testing (like digital exam halls). The (informal) study workplaces were divided into silent study places, touchdown study places (for temporary self-study or group

work) and meeting places (social encounters, compare with learning scenarios above from Thornburg; Stöckert, Van Der Zanden, Peberdy, 2019).

In Delft, they tracked following **benefits**: the satisfaction among teachers increased, system errors have dropped, frontal pedagogy is becoming more blended, mixed practices favour active learning and social coherence among students is stronger. We can draw a lesson that major changes in the teaching-learning process demand also well planned and well negotiated start.

Schlenker and Neuburg (2022) concentrated on developing and testing participatory methods and instruments to plan and design physical teaching and learning environments for vocational education and training. They developed **a special workshop format** called *Raumwerkstatt*, which was developed within the project; it was conducted in the form of case studies with trainees and apprentices.

Schlenker and Neuburg (2022) developed a workshop with methods helping them to formulate their desires, wishes and dislikes. They included learners, familiar with the place, and those not.

Table 7: Raumwerkstatt: process variants

Phase	**Education rooms**	
	known (e.g. vocational school)	**unknown (e.g. training centre)**
Preparation	Photographing or presenting favourite places (places for communication, relaxation, learning)	Selection of learning places (photos) and analysis (favourite places)
A	Education room analysis	
B	Introducing individual and personal places of learning locations (own photos)	Introducing individual and personal places of learning locations (given photos)
C	Categories for self-learning, learning and communication with others, and relaxation (own photos)	Categories for self-learning, learning and communication with others, and relaxation (given photos)
D	Development of meta-criteria	Development of meta-criteria

Source: Schlenker and Neuburg (2022, 35)

Preparation phase distinguishes pupils in the school our outside the school, in a training centre. *Phase A* is taking place only with the first group, where they describe and evaluate every place they learn in the school. In the *phase B*, they also assigned keywords to the pictures, which were grouped under didactics, room or media technique. In the *phase C*, they were divided in three groups, with focus on learning, communication and relaxation. They presented the findings to the others. For *phase D*, the question "how do we want to learn" was asked; the meta-criteria on data from previous phases were set. Following categories were developed: media usage, personal exchange, availability, atmosphere, types of learning, spatial design.

In (1) *media usage,* the learners combined learning and relaxation, working and learning. BYOD and Wi-Fi access. (2) *Personal exchange* means meeting people from outside and working with peers and groups; common spaces, areas for movement, meeting places, small niches are necessary. (3) *Availability* means access to work materials, digital technologies, to soft drinks; the availability of internet, PCs, or notebooks and digital teaching materials is very important. This counts for all and not just teaching places. (4) *Atmosphere* is a very colourful category, always subjective; shape, colour, light, climate, acoustics, material and spatial distances are important to everybody. Individually the level of noise is very different. Informal atmosphere, feeling like at home is important. (5) *Types of learning* is the second most important category, also because it influences all other categories. The didactics demands very different places. We have here individual learning or learning with a group, creative personal freedom and structured guided exercises. In particular, competence development is very central here. The question is how to design the learning environments flexibly. Similarly is (6) *spatial design* the most extensive. How to design a room being able to host different forms of learning. Is should offer opportunities learning but also for relaxation. Since it is about VET,

some of the rooms must very much resemble the places in industry. The basics are also addressed, the cleanliness and Wi-Fi. (Schlenker and Neuburg, 2022; compare with holistic approach from Stöckert, Van Der Zanden, Peberdy, 2019)

Technology and pedagogy

Since technology and pedagogy are the other two angles from the The Pedagogy–Space–Technology Framework from Stöckert, Van Der Zanden, Peberdy (2019, 384), it is crucial to address them. The technology driven changes are often the main reason behind the redesign, since technological innovations change the society. The pedagogy is also changing along other societal changes and in the direction of student-centred learning.

Haines and Maurice-Takerei (2019) explored the pedagogical approach **after two prototype classrooms** were introduced. It was often going in the way of focus on the students, responsiveness to them, being more learning-centred. At the beginning, there was insight, new spaces didn't allow content delivery as in the old spaces, then the reduction of content enabled more face-to-face interaction and responsiveness. In the next phase, focus was set more on students and active learning and in the end teaching was more structured and supporting group activity.

Penrod (2021) discussed the relationship between learning spaces in general and in particular on one side, with the pedagogy approach and introducing new technologies in the HEIs while fighting the covid-19 prejudice of going virtual as a trend in HE. Failure rates, low conceptual understanding and high absenteeism were the **reasons** for look out for new forms of teaching. Survey has shown that the collaboration studio (active learning space) motivates students to learn. Health care itself is a team-based profession. Innovative learning environment should offer the kind of human interactions like in modern workplaces. However, working

sporadically in teams doesn't increase the team spirit among students and elevates their learning motivations. Some studies have shown that at least 40 hours of teamwork are enough to further team formation, productivity and team learning.[17]

In the study Penrod (2021), they set the requirements for the support of active learning principles, e.g. they set the **specific pedagogy at the beginning**. On the other hand, they anticipated future evolvement of the teaching and learning practices. They set a team for technology and a team for design, they got input from the teaching staff. There is no need for more physical spaces but increased flexibility in the spaces available: for collaborative learning, open, flexible and diverse designs, combining physical and digital infrastructure.[18] Today, the learning spaces in the specific college didn't foster the constructivist and collaborative nature of the new active learning curriculum. In the process, they sensed a reluctance with some instructors concerning highly complex technology spaces. They also wanted to design learning spaces to be flexible, appropriate for different types of teaching and other uses. This concerns furniture as well as technology.

Penrod (2021) also discussed **impact of covid-19 pandemic**. Virtual learning in the 2020 and 2021 grew significantly. The need for large and numerous classroom spaces diminished.

The future learning spaces should combine technology and pedagogy to reach for versatile teaching, collaborative and interactive learning. Learning should be perceived as a social process with the learners in centre. Such classrooms should mix modern space design with

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[17] Sasson, I., Malkinson, N. and Oria, T. A constructivist redesigning of the learning space: the development of a sense of class cohesion. Learning Environ Res 25, 183–197 (2022). https://doi.org/10.1007/s10984-021-09356-z

[18] They pursued Active learning spaces (ALSs) concept: round tables, a shared laptop, lectern in the middle, wall-mounted displays around the room, that's how it looked like in the 1990s. Later the model was amended by MIT. ALC (active learning classroom) has usually movable working surfaces, grouped in pods, not frontal oriented but encouraging student interaction and access to technology.

flexible furniture and BYOD conception on one side with modern learning approach like situated learning, distributed cognition, learning communities, knowledge building… [19]

Barriers

While discussing the design and use of learning spaces for student active learning, Stöckert, Van Der Zanden, Peberdy (2019) identified three categories of barriers:[20]

1. Institutional inertia: it encompasses the gap between goals and reality, lack of responsibility, teachers don't share practices, and don't want changes, traditional teaching prevails.

2. The quality of courses for teachers: technology is used for administrative jobs, or transmission of content; lack of support in structures and leadership; lack of need analysis, systematic introduction and relevant courses for users.

3. Academic leadership: here they pointed out, that the new forms of teaching require teamwork, with support, resources, and infrastructure; and that many levels are present, including national and institutional leadership.

Haines and Maurice-Takerei (2019) concentrated on teachers. External considerations, such as curriculum, put a lot of pressure on some teachers – to find the balance between the content and facilitation skills was often a challenge. Courage and motivation of the teachers was crucial to embark on this way. The study didn't explore individual contexts of teachers, their disciplines, their beliefs about learning. Teachers in new spaces need the ability to interact with students, new socio-cultural skills, the ability to use new technology and ways of

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[19] Hod, Yotam. (2017). Future Learning Spaces in Schools: Concepts and Designs from the Learning Sciences. Journal of Formative Design in Learning. 1. 1-11. 10.1007/s41686-017-0008-y.

[20] S. Lillejord, K. Børte, K. Nesje, and E. Ruud. (2018) 'Learning and teaching with technology in higher education – a systematic review', Norwegian Ministry of Education and Research Knowledge Center for Education, Oslo.
S. Lillejord, K. Børte, K. Nesje, and E. Ruud. (2017) 'Campusutforming for undervisning, forskning, samarbeid og læring', Norwegian Ministry of Education and Research Knowledge Center for Education, Oslo.

using it in a pedagogical sensible way. The more active style of learning for students demands more time and is more challenging also in bringing the pedagogy and space on the same line. Penrod (2021) believes, the mentality that minimal effort would be required to understand the technology concept for the new learning spaces was could be considered as a barrier stemming from technology, but it was reversed as a starting point for promoting active learning. Here, the degree to which an instructor's views align with a constructivist approach was crucial. Traditionalist approach, which is teacher-centred was negatively influencing the success of a new active learning curriculum. The study by Sawers et al. proved that constructivist oriented teachers had more success in the classroom as the more traditional ones.[21]

Another barrier was that a small number of instructors were hesitant to use the technology. This barrier was overcame by letting them gradually adopt to the new technology and at the same time using their existing teaching methods (Penrod, 2021).

Another issue is the financial one, “the cost of purchasing technology [is] a consideration, training and motivating staff and students to use the technology are as well.” (Penrod, 2021, 18) This means that changes like the present one are happening gradually since they affect financial, pedagogical and technological restraints. The author claims “there are no examples of ALS implementations across an entire institution”. (ibid.) The solution at the college was that the spaces were software-centric, this enabled greater flexibility – the learning space could then be used as a didactic or lecture-based space, an event space, an ALS, or a student group space. The author was referring to “a smaller physical footprint”, which then allows for

[21] Sawers, Kimberly and Wicks, David and Mvududu, Nyaradzo and Seeley, Lane and Copeland, Raedene. (2016). What Drives Student Engagement: Is it Learning Space, Instructor Behavior, or Teaching Philosophy?. Journal of Learning Spaces. 5. 26-38.

various space usage. In the conclusion, she refers to the hesitance of the administrators to fund these changes due to the impact of COVID-19 and the shift to virtual learning, but she thinks that thinking of learning spaces – physical and remote – should include both ways as combining.

Penrod (2021) also had some doubts about research, the researchers often do not take in account the diversity of learning spaces – it is usually about traditional lecture classroom or technology enhanced ALC. One research showed in ALC various teaching strategies were in use (problem-based exercises, team-based projects, interactive assignments, think-pair-share … Student outcomes, and attendance and attitudes were better, but the reason behind was unclear – learning space, teacher's behaviour or curriculum.

Other stakeholders

Various authors have enumerated stakeholders as students, teachers (both groups being users), school management, local community, educational experts and architects. Here we are referring to teachers and architects. In the previous section, a lot of attention was put on teachers. Our project has students as a central issue, but teachers' role cannot be neglected. Their willingness is crucial, as well as education needed to employ new methods and motivation.

Blackmore and O'Mara (2022) addressed the investigation primarily to the professional development of **teachers** and their learning practices. It shows how far-reaching the change in built spaces can be, and how varying discourses can tackle. The authors believe the teachers should be put in front of every school change; they strongly support bottom-up approach and practitioner-based reform. This could put other stakeholders in an inferior role, but this is only

an impression – with the exception of the students, other stakeholder usually have a very fixed position in the process.

Haines and Maurice-Takerei (2019) have investigated how teachers learned to teach in new collaborative learning spaces. They warn that teaching in old ways in new spaces means decline in effectiveness of teaching. A better understanding of pedagogical issues for teachers means using new spaces in a right way.

Since the initial change with the case of Haines and Maurice-Takerei (2019) was in the physical design, the reaction to it was changing the practice, this was reinforced by the insight the existing pedagogical practices in new spaces weren't as successful. The design influenced the teachers in two ways – as (1) the layout of the room and as (2) the technology. The layout of the room didn't enable teachers to have eye-contact with the students. Consequently, they tried to introduce new ways how to engage students with the content. Teachers enjoyed the freedom of movement and had better access to and interaction with the students. The technology didn't prove always to be available, at least not in a way teachers anticipated. Therefore, in the beginning they often relied on alternative ways of teaching without technology in case, the technology didn't support their intention.

Salama (2011) fixes some observations and conclusions on the work of **architects** in the educational sector. The creative aspect is often overrated whereby the architects should deduct their work from users' experiences of learning environment. There has been a growing interest in evidence-based design. It builds on user-oriented building evaluation research, post occupancy evaluation (PoE, see above). It seems to be the most promising approach because it includes user research into design practice. It is crucial for architects to adopt the view that not all children learn the same. Responsive architects and educators have included goals like

a sense of identity and belonging, team teaching, small groups, spectrum of learning possibilities. This implies different classroom prototypes (see above, Salama, 2011).

What is there for us

Traditional classrooms have evolved, space matters and is highly influenced by pedagogy and technology. There are different reasons to do that, usually pedagogy is defined at first, sometimes the space with technology drives the change. The change influences many practices and they have to be taken in consideration. Various pedagogical practices can be employed. There are many benefits, but the obstacles can be quite disturbing. We don't have many examples of participatory design for redesign, but we can employ the findings from the previous section. Flexibility of the new learning environments is crucial; it reduces costs, enables usage of different pedagogies, and can address different users. Teachers are, besides students, the main stakeholder group; architects must focus on users and pedagogies, and less on design.

4. Conclusion

In this paper, we wanted to investigate the literature, concerning notions of citizen participation, participatory design and learning environment, the process of its redesign and – in the background – their connections with the student-centred learning.

After initial clarification we devoted some time to diverse features of citizen participation. The phenomenon gained importance in the 1960s, we started with Arnstein's ladder of citizen participation (1969). This typology explores diverse forms of citizen participation along the dimension of citizen power. It detects forms which are only visually resembling citizen participation; on the other part of the scale, she puts *citizen control.* The Arnstein's ladder of citizen participation influenced many authors and experienced many enhancements. The next model, from Burke (1968), was more problem oriented, he maintains different forms according to the problem, it addresses. Another model on citizen participation was labelled 'role-oriented'.

The author Callahan (2007) inspected diverse relationship between administrator and citizen, and linked them with their respective roles. The most elaborate and contemporary model we found, was the one from Lundy (2007). She developed a model, based on the article 12 of Convention of the Rights of the Child. It follows a symmetric circular temporal logic with the four stages – space, voice, audience, influence. The development from Arnstein and Burke to Callahan and Lundy reflects the new interest on citizen participation in the last two decades and shows the change in our societies, where there the aim of citizen power isn't addressed any more but more its references. This could make us enthusiastic as well as pessimistic. Lundy devotes its model to children, which must be aided by adults. If the initial citizen

participation rooted in urban planning, this one goes in the realm of education, family, childhood … and is more future oriented, without massively disturbing the relationships in the society. This can be also shown very graphically in two different approaches to governance, Foucauldian and Habermasian. How the changes are introduced in the society, either over conflict or over deliberation? Foucauldian perspective was more predominant in the 1960s, while in the 21st century, it seems that Habermasian prevails.

For us, Lundy's model is interesting for it bridges very different areas of our concern – children, legislation, participation – and for it addresses the student-teacher relationship. It is not so value laden as it is the Arnstein's where we clearly see the good and the bad; it just simply demands to help the child to express their views and to enact them. Thereby the notion of the child can be extended to other relationships where young people, formally of full age, are participating.

Furthermore, we scrutinized planning the citizen participation, the many mechanisms and techniques of citizen participation, and the dilemma on virtual participation. Many ideas come, as with the models, from the area of urban planning which seems to be the most developed. And those ideas can be adopted also in the education: including participants as early as possible in the participatory process; have different stakeholder groups; informing the participants in a proper way; choose the right mechanism/technique that suits our goal; include virtual participation if sensible. In the following section, we made a transition from citizen participation to participatory design.

Since we are moving from urban planning sector, where the roles today are public servant–citizen or implementer-voter, in the educational sector the student-teacher relationship is more unbalanced. The term 'user' is more neutral and value-free. But this cannot neglect the

fact that with participatory process – citizen participation or participatory design – the power balance among stakeholders is changing.

In the next, more empirical section, we had two strains to follow. The first one was around 25 studies we filtered out of 300, found with the academic search engines, dealing with participatory design (PD) and learning environments. The second one is dealing with studies, which don't have PD as a core activity but are dealing with redesign of learning environments. The findings from the PD studies are grouped in those, dealing with concrete learning environments, classrooms and/or schools, and in those, dealing with concepts. The first are very hands-on case studies, the latter are building upon the first. We found the most useful approaches in the Mäkelä and Helfenstein (2016) and in Könings, Bovil and Woolner (2017), both studies in the *Concepts* section.

The first study shows us a vast array of learning environment features, sensibly structured; the study is amended by a workshop and questionnaires. The second study included several tools to capture a complex process of redesign – research cycle, stakeholder analysis and participation matrix.

In the second strain of literature review, we used The Pedagogy-Space-Technology Framework from Stöckert, Van Der Zanden, Peberdy (2019) to show how the three angles correlate, and investigated the studies, dealing predominantly with higher education, along this. The main finding was, that if we change the space (and technology), the pedagogy must follow. Most examples of changes in learning environments put the pedagogy at the beginning. And since the studies here usually don't use PD or only marginally, the teachers are often in the forefront – and including this stakeholder group is inevitable, if we want to achieve a sustainable change. What is common to the most of the studies in the chapter 3 is the awareness that the changes must be planned carefully and the stakeholder groups should be included in a broader

way than in the past. The users of the space must have influence over its design. In the education, the changing pedagogy with student-centred learning shifts the student-teacher relationship. This shift is unimaginable with a similar shift in learning-space design. Raising awareness about it should be our ultimate goa

5. Literature

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6. Appendices

Appendix 1 – Selection and organization of studies on participatory design

For the collection of data, we used six different search engines and databases: JSTOR, SAGE Journals, Scopus, Taylor and Francis Online**,** Wiley, and Web of Science. With the databases, we could export multiple references and import them into Mendeley Reference Manager for further inspection. We limited our search to the articles, published between 2011 and 2021. For narrowing our search, we mainly used phrases 'participatory design' and 'learning environment', If possible, we limited our search to articles. After the import of all references into Mendeley Reference Manager, we had a single reference database of 283 references. In the next step, we excluded articles, consisting only of abstracts, books of abstracts, books; articles published too early, articles without an author, editorials. In this way, we excluded 41 references. We also eliminated 30 duplicates. To this effect, we limited our database to 212 references. After going through all the abstracts, we reassessed all articles and excluded another 171 references of articles, dealing with computer games, virtual learning environments, and specific subjects like STEM, special needs etc. Another stage in the process was reading the articles to assess, whether they deal predominantly with learning environment and physical design. In this stage, we excluded another eight articles, dealing with computer design (3), pedagogy (1), epistemology (1) or which were editorials (2) or not accessible (1). We gained a database with 33 references.

Only two of them were not referring to the educational sector per se (health care, library), the other 31 were related mainly to primary and/or secondary schools (24), five of them were from the HE sector and two were fairly general. We took another cycle of close reading while

trying to establish typology of the articles, this time we excluded another six articles – we take out the health care article, one literature review and another four who weren't dealing with physical places. Then we had 25 articles of which only three explicitly stem from the higher education and one deals with the communal library. The others were bound to primary and secondary education, although not all of them very explicitly.

In this paper, we examined 25 studies, dealing with participatory design in the field of physical learning environment design, published in the period from 2011 to 2021. We found the studies with the help of six academic search engines and databases. We divided them in three categories, classrooms, buildings, and concepts and pedagogy. The latter category included studies, which either did not specify the type of physical learning environment or did include both.

The purpose of this systematic literature review was determined with the requirements of the project Creative Repurposing of Educational Spaces for Innovative Student-centred Environments (CREST) which is taking place in the higher education sector. The findings will be used in the project but they have some value also for future researches because they clearly show what has been done so far and what is missing.

Although we proceeded systematically, we could have missed many studies, published in other languages, listed in other academic databases; studies without "participatory design" in their keywords, abstracts or titles. Many other forms of publishing weren't included, as blog posts, white papers, workshops, even art exhibitions (Tuhkala, 2021). Hopefully, this didn't hamper this review in a way, it would be not useful for our project and future research.

Appendix 2 – Climate change in Durban – two examples how change was (not) made

Alex Aylett addressed **two main approaches to governance**, one labelled **confrontational** (Foucauldian) and the other **consensus-based** (Habermasian).

He inspected them under the provisions of climate change policies of Durban, South Africa, and the city's respectively participatory planning process. In the article of 2010, he detected increased use of participatory practices in the global organizations as World Bank and OECD. In addition, the Intergovernmental Panel for Climate Change started to promote participatory practices. The city of Durban, the biggest port of the country and vivid Eastern metropole of South Africa bears racialized and highly polarized inequalities. The city introduced participatory process in the municipality's Integrated Development Plan, which tries to establish the balance between environmental and socioeconomic concerns. (Aylett, 2010, 99) In a large case study, underpinned with site visits, workshop participation, semi-structured interviews and informal conversation, Aylett depicted two participatory processes with the climate changes in the background. Firstly, he described primary form of state-led participation under the provision of the city's five-year Integrated Development Plan (IDP). The IDP facilitators, visited each one of 100 city wards three times to host public workshops with local residents, whereby the results were seen as modest – the public concerns were easily deductible also from other sources. The officials argued, many of participants weren't thinking strategically. Later, Aylet showed that the participants were given only specific information and some of the real problems were blurred. He concluded that participants first were learning a language in which to communicate with the authorities, which in turn could have got a reasonable input on information if asking right questions. He also doubted on the independent status of the ward committees, which were formed later to relieve the

participatory process – elected, they usually mirrored the dominant political party. (Aylett, 2010, 108)

In the case of environment, IPD was given quite a central role but very low budgeting. In the participatory practices, despite the very high importance of sustainability on paper, no information on important issues as electricity consumption was given. The IDP was only a reflection of existing balance of power. Since in the South of Durban, many heavy industries are settled and (air) pollution strikes high numbers, an alliance of NGOs and community based organisations (CBOs) was formed, which, with a mixture of collaborative and confrontational participation practices, has achieved a more comprehensive air-quality monitoring system. In the further development, the city has not only denied the crucial role of the alliance in the air quality monitoring improvement, but also perceived the alliance as predominantly negative forces in the city what Aylett names “an example of institutional blindness”. (Aylett, 2010, 111)

His conclusion is that current practices in participation are not addressing the climate change in a way to enable sustainable urban planning with the crucial role of the population. However, he sees a good onset in institutional participatory practice, in institutional reform and in engagement in communities, marginalized by apartheid. Despites he identifies the limits of this more centralized, consensus-oriented approach, he sees its potential in incorporating the other one, the confrontational grassroots mobilization, put in life by NGOs and CBOs, forming the environmental alliance. In this way, the conflict is made productive.