Dimensions of participatory practices in a digitally supported learning setting

Dimensioni delle pratiche partecipative in un ambiente di apprendimento con supporto digitale

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ABSTRACT

Numerous empirical studies have examined the democratic practice of students in educational institutions without shading a light on the systemic problems (e.g., Allulli, 2011, Demirovic, 2013, p. 17, Feu et alii, 2017). The latter arise from conflicting expectations about the culture of interaction between politics, administration and pedagogy (Baldacci, 2017, p. 25). The aim of the present study is to investigate the potentials of students' participatory practices in the context of gamified learning in academic teacher training. Based on operationalised stage model of gradual participation (Hart, 1992), the intertwining of theory and practice in participatory higher education through gaming and game design is analysed (Finseth, 2015). The results show a situation-specific seminar profile that has large parts of both heteronomy and self-determination. These phenomena are 'moments of breakouts' (Budde, 2010, p. 385), in which teachers and learners jointly decide on the spot whether and how to confirm or reformulate formal and informal expectations (see Zagreblesky, 2007)

Numerosi studi empirici hanno esaminato la pratica democratica degli studenti nelle istituzioni educative senza fare luce sui problemi sistemici (per esempio, Allulli, 2011, Demirovic, 2013, p. 17; Feu et alii, 2017). Questi ultimi nascono da aspettative contrastanti sulla cultura dell'interazione tra politica, amministrazione e pedagogia (Baldacci, 2017, p. 25). L'obiettivo del presente studio è indagare le potenzialità delle pratiche partecipative degli studenti nel contesto dell'apprendimento gamificato nella formazione accademica degli insegnanti. Sulla base del modello a stadi operativi della partecipazione graduale dei giovani adulti (Hart, 1992), viene analizzato l'intreccio tra teoria e pratica nell'istruzione superiore partecipativa attraverso il gioco e il game design (Finseth, 2015). I risultati mostrano un profilo di seminario specifico della situazione che presenta ampie parti sia di eteronomia che di autodeterminazione. Questi fenomeni sono "momenti di rottura" (Budde, 2010, p. 385), in cui insegnanti e studenti decidono congiuntamente sul posto se e come confermare o riformulare le aspettative formali e informali (cfr. Zagreblesky, 2007).

Keywords: participatory practices | digital learning formats | academic teacher training | potentials of gamification | EduSpaces

Parole chiave: pratiche partecipative | formati didattici digitali | formazione accademica dei educatori | potenzialità della gamificatione | EduSpaces

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Introduction

Independent inquiry and unrestricted questioning characterise both the thinking and the acting at a university in the sense of Derrida (Derrida, 2001). Understanding an institution of higher education this way implies that every argument put forward in public counts equally in principle. At this point, the principles of an academic enterprise and those of democracy are overlapping (Demirovic, 2013, p. 17). However, from a systemic perspective, democratic interactions in educational institutions tend to raise a fundamental problem.

These systemic difficulties are depicted in the first paragraph. Then, the structural possibilities of digital media offers are outlined regarding participatory practices. Based on this, an operationalised research model is presented for analysing learners' participation in higher education contexts. The third section describes the framework conditions for the concrete, joint being at work. In this light, participatory practices are analysed employing the research model. Further methodological research and higher education didactic prospects are briefly presented in the conclusion.

1. Participatory practices in formal education situations.

Notably, academically initiated processes of mediation and cognition take the form of the university and thus permanently distinguish themselves from other domains of knowledge reproduction and competence development (Demirovic, 2013, p. 19). On the one hand, this is supposed to offer space and leisure from the conformism of everyday understanding, simultaneously evoking anti-democratic side effects. Thus, the founding of faculties is aligned with economic interests, research questions are tailored to the priorities of third-party funders, or the work performance of teachers and students is measured by administrative standards, such as workload. Internally, each educational institution establishes further guidelines and expectations in the form of mission statements, which in turn frame learning opportunities. With this in mind, school communities pass on a generation- and organisation-specific culture of interaction through conjunctive experiential knowledge (Bohnsack, 2017, p. 128). Consequently, teachers and learners act in pre-structured, cross-situational units or practices (cf. Hirschauer, 2016), partly between their self-image, concerning independent thinking in teaching and research on the one hand and the conflicting conditions of an economic organisation on the other hand.

To promote thinking and discussion among learners in the sense of active participation in the given context, the idea of cooperative (learning) communities has entered lectures as a teaching form these days. The design variants range from selective participation opportunities such as short oral statements or a small digital Kahoot survey to seminar-like structures consisting of discussions initiated by student questions along with written work phases initiated by assignments (Kruse, 2010, p. 82). The students' self-directed learning can be facilitated by project-based topics. In this process, learners are activated to create their structures, including independent time management as well as negotiating meanings in smaller working groups or open discussions in the plenary. The dialogue-based, participatory organisation of the university seminar on the provider side is countered on the user side by the desire for fixed structures and clear leadership (Gördel *et alii*, 2018). The *doing student* proves to be a competent practice with which learners fulfil diverse and sometimes contradictory expectations (Budde, 2010). In parallel, students are individual agents, since they can also decide on a different behavioural option at any moment in the course (Giddens, 1988, p. 60). The system-immanent problem arises, whereas the solution can only be found on both a group-related way and a temporary basis (Hildebrandt *et alii*, 2014).

Budde (2010, p. 385) points out that true participation inevitably has so-called moments of disturbance. Schwanenflügel describes precisely this moment of deciding not to fulfil all expectations or to perform differently as participation from the perspective of self-determination (2015, p. 49). According to Swertz (2014, p. 73f.), it is exactly these performances that express democratic action.

2. Culture of digitality as new structural conditions of spaces of action

Since the turn of the millennium at the latest, the increasingly dominant culture of digitalism has led to changes in the structural conditions in physical and social spaces (Stalder, 2019). For example, personal events are not only created for one's memory by means of digital technology but are also embedded via social network services. In liberalised societies, the experience itself or its aesthetically successful documentation takes on a high level of significance when it meets with great resonance in the circle of friends and acquaintances through comments and links (Autenrieth, 2011, p. 158). This poses fundamental challenges for communities, as the negotiation of meanings becomes more comprehensive, contradictory and short-lived.

Three trends in particular condense the complexity of the living world: Global networking is accompanied by an expansion of the social base. This increases the individualisation and differentiation of content and creates an almost unmanageable pluralism of values. The driving force behind this development is not digitalisation per se, but the use or handling of the technological infrastructure. According to Stalder (2019), these three trends result in the basic pillars of a culture of digitality: referentiality, communality and algorithmicity.

By referentiality, Stalder (2019) means the personalised selection from cultural experiences that represents both a focus of attention and a productive performance. Sharing photos and videos on social media amounts to a statement as well as an imperative: *Attention, the shared here is important not only for me but for all consumers.* The act of sharing presupposes other people who validate the selection made. By resonating, the individual's activity broadens the horizon of the feedback giver, so to speak. Through the offers of references from fellow human beings, the reference field of the feedback receiver expands at the same time and a shared horizon or temporary commonality emerges. The reciprocal reference to references in digital media generates data that are processed into calculation rules, automated decision-making procedures, and mechanically presort reference offers. At this point, algorithmicity not only selects access but also restricts the possibilities of self-constitution. Under the aforementioned conditions, the central challenge for universities is to qualify students to deal with quantities of information and- sources (Stalder, 2018). This still includes the active comprehension of abstracted facts in lectures, as well as the reconstruction of complex situations through a multi-perspective presentation in seminars or laboratories, and the transparent (re)production of knowledge.

3. Levels and types of participatory learning in educational institutions

In the pedagogical discussion on participation, various stage models can be identified that describe the participation of individuals at different levels in democratic social structures or institutionalised communities. While Arnstein (1969) focuses on adult participation in democracy at the community level, Hart (1992) adapts the model for the gradual participation of minors. Beranek and Ring (2016) are dedicated to the media actions of adolescents in play worlds as preliminary stages of participation. Autenrieth and Nickel (2022) examine the interweaving of theory and practice in participatory university teaching through gaming and game design.

Mayrberger (2012) bases the orientation on the elaboration, whereby the interaction-controlling side is supplemented by characteristics of self-activity. These are to be understood here both as a prerequisite for the development of knowledge structures and as indicators of participatory learning.

Steps	Types	Interaction design[1)]	Forms of learners' self-activity[2)]
1	No participation	Objectives, content, working methods and results are completely externally defined.	Learners behave in accordance with instructions.
2		Learners are scenery and only participate when instructed.	
3	Preliminary stages of participation (Participation)	Verbal contributions have no influence on the situation (symbolic participation).	Voluntary, affective responses
4		Learners are asked about their interests and expectations.	
5		Learners are involved in a arranged learning situation and receive comprehensive information (e.g. pre-structured project work)	Learners understand what the project is about and know what it is supposed to achieve. Selection of material, agreements on division of labour
6	Participation (participation)	Learners' verbal contributions are recorded. At a later stage, they are conceptually evaluated.	Learners articulate their own ideas about a learning situation (e.g. feedback, evaluation), teachers are no longer involved in the actual realisation)
7		The educational project idea stems from the lecturer.	Learners are involved in decision-making on methods and assessment criteria. Demonstrate metacognitive skills such as optimised listening or communication that supports learning.
8		Teachers are supportive partners.	Learners initiate the learning process proactively They are in charge of selecting the content, objectives and methods. Self-directed arguing, discussion and asking
9	Autonomy (self-administration, -organisation),	Teachers will be informed if necessary	Learners have complete freedom of choice They are responsible for «their» learning process by regulating the social, motivational and metacognitive aspects themselves

Table 1 Model for the design of gradual participation in formal education contexts
(based on 1) Mayrberger, 2012; 2) Zimmermann, 1994)

4. Working together with digital educational media from the EduSpace learning lab

The syllabus in the first year of the educational science Master's programme for primary education at the Free University of Bozen/Bolzano provides an in-depth examination of the methodological-theoretical foundations of general didactics. The 20-hour laboratory in the EduSpace learning lab pursues to deepen the contents presented in the lecture, such as the safe use of technical terms or the planning of learning opportunities in kindergarten and school. A central focus in the didactic concept of the EduSpace learning lab is on media education. To acquire elaborate media competencies within the dimensions of knowledge, criticism, use and design (see Baacke, 1997), it is indispensable to explore analogue teaching and learning media as well as to experiment with ICT technology, AI-controlled devices and to try out game elements in learning processes (cf. Deterding *et alii*, 2011).

Beranek and Ring (2016) assume that digital game worlds can serve as spaces for participation experiences due to their social structures, their closeness to life, and the appeal to intrinsic motivation. The production of games may therefore create participation experiences that are characterised by a high degree of

self-direction and independent action. Depending on the game format, objectives and game mechanisms, different competencies are required (cf. Sillaots, 2014, p. 106; Kapp *et alii,* 2014, p. 37ff.). Hence, foster joint reflection on content-related facts, qualitatively meaningful questioning techniques and answer specifications, but also enable the experience of social inclusion (Sailer, 2016, p. 181ff.).

In the setting of the EduSpace learning lab, students become players first and then mediators of theory in practice. The transformation includes communicating the learning objects in the game, spontaneously commenting on game situations and reflecting on the contents and processes in a guided way. Cooperatively organised formats enable students to become inquiring learners, to evaluate learning products collaboratively and thus to deepen basic knowledge.

The operationalised dimensions model (see Table 1) was used as the basis for classifying the participatory components of the students in terms of structural theory and was divided along the institutionalised sections during academic training. The structural-theoretical categorisation was carried out using a four-level rating scale. The result is a specific seminar profile with varying degrees of external and self-determination.

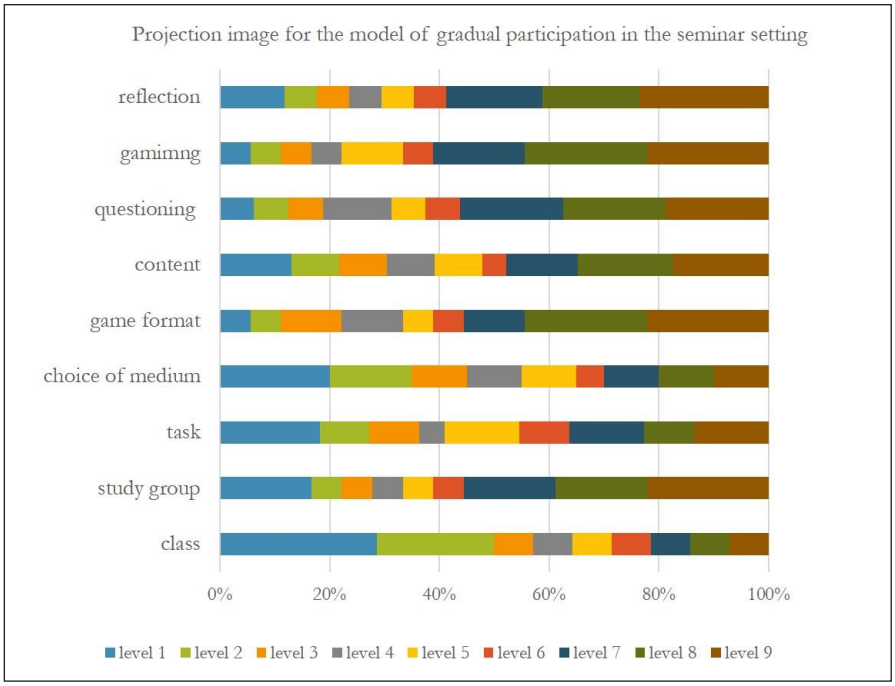

Figure 1. Dimensions (levels and types) of participatory learning

In terms of structural theory, enrolment on the degree programme can be regarded as an independent decision. In contrast, enrolment in a seminar group is carried out by an administrative act of the faculty secretariat at unibz. In this context, the allocation is made in alphabetical order and the maximum group size is based on the authorised room occupancy rate or the specified seminar size of 25 students.

Within the seminar, in addition to reading in individual work, task-based learning is carried out in small groups to analyse specialist content. The composition of the groups can be randomised or based on the students' wishes. The working alliances in the small groups can only be formed voluntarily to a limited extent, as the total number of students is reduced by the pre-selection. The work within the small group is thus orientated towards the informal laws of the social world of peers, as well as the habitus of *doing student* learned in the university context. Successful collaboration depends on positive interdependence, which consists of each group member continuously and reliably making an individual contribution (Kunter & Trautwein, 2013, p. 66). Distribution conflicts are often not negotiated within the small group (Klöpping, 2004, pp. 102-110), but avoidance behaviour is hidden and delegated ex-post to the seminar leader (Pichler *et alii*, 2006; Schmitt, 2010).

In the seminar setting analysed, the ActiveFloor serves as a digital medium for designing a learning environment. By representing the mechanical, dynamic and aesthetic features of a computer game, the ActiveFloor offers a gamified learning setting. After logging in to the online platform, players can select a

game template. They can use the game template to determine the interaction options and customise the specialist content to be taught to specific target groups. The game idea designed on the laptop is projected onto the floor via a box mounted on the ceiling. The built-in tracker registers the movements on the playing field.

	*SpinIt* (Spin the Bottle) was used to get to know the interaction partners. The questions related to geographical origin, positive and negative learning experiences, self-assessment of competences for the chosen profession and understanding of the concept of didactics.
	*Combi Frogs* is a memory and cooperation game in which it is important to name and repeat all items in the correct order. Participants' choice to present teaching methods.
	*Smack-the-fly* was used in the seminar to internalise the characteristics and processes of teaching methods. The games aim is to find the right answers before the time runs out.
	*Supersorter* was used in the seminar to contrast the characteristics of teaching methods. In the Super Sorter, all answers are presented at the same time. When a term is displayed, the players have to choose the correct answer category for it.
	*BuzzIt* is a classic quiz in which players are presented with a question and only after *buzzing do they get the* three possible answers. The students have developed a final test on basic concepts of didactics in this format.
	In *BikeRace,* two to four players compete to get around the track the fastest on their bikes. The bike gets going by the players* running from one side to the other and pedalling. During the ride, you are stopped by some right/wrong questions. This format was also used to differentiate basic concepts.

Table 2. Frequently chosen game formats[1]

The game is planned in small groups. As the design is based on the given setting, the students first choose the game format and face the challenge of implementing basic didactic concepts in an educational game.

In the second processing step, they use the basic literature and their notes to draft either questions and possible answers on basic concepts of didactics or a profile of teaching methods. Each participant in a working group has the opportunity to consult another source in addition to the basic literature when aggregating knowledge. According to Dörre and Bukow (2014), the decision and selection of further sources of information is already to be seen as an act of self-determined learning and as participation in democratic professionalisation. In order to be able to make further statements about the quality of the selection mechanisms and democratic voting processes, both the individual's approach and the group dynamics would have to be documented.

When developing questions for the game-based interaction, it can happen that the small group expresses doubts about the quality of their work and requests an interim assessment from the teacher. The task set by the seminar leader as a collaborative problem-solving exercise is then called into question in terms of

1 Icons are taken from https://files.activefloor.com/docu/myfloor/game_manual_en.pdf

structural theory. Budde (2010, p. 385) characterises this as moments of refraction, in which teachers and learners decide situationally whether and how the different expectations are reassigned.

During the game itself, the students responsible for the game then take on the role of observers. Through the verbal behaviour of their fellow students, they receive intuitive feedback on the understanding of their topic-specific questions, the quality of the answers and the aesthetic implementation for the playing field. The players, in turn, are required to understand the game mechanics (Rehfeld, 2014, p. 70) and at the same time to grasp the content information presented and react accordingly. This requires compliance with the rules of the game on the one hand, such as time limits or the required sequence of actions, and the communication of knowledge on the other (see figure 2).

Whether the information is correctly understood or not is reported back to the player both by the game and by the other players (Mäyrä, 2008, p. 14). With increasing experience of the game mechanics, players can concentrate on the content-related production and acquisition of information.

The players, in turn, are asked to understand the game's mechanics (Rehfeld, 2014, p. 70), simultaneously grasp the content-related information presented, and react to it accordingly. This requires the observance of the rules of the game on the one hand, such as time limits or the required order of the game actions, and the communication of knowledge on the other.

Figure 2

5. Considerations for the promotion of democratic participation structures

Amidst the model for designing gradual participation (see Table 1) and taking into account the educational context described, the following modifications are conceivable to improve the quality of participation and involvement both instantly and in the long term.

To achieve a change from non-participation to participation within seminar students might choose their own topics for the game design. In this context, it would also be possible for them to negotiate their participation in interest groups independently. However, the extent to which this results in a balance between entertaining game elements and the learning content to remains open.

An improvement in the participation structure is possible even in the short term when the problems of democratic action are also recognised, communicated and solved independently within the voluntarily created study groups. At this point, an intrinsically motivated upgrading from participation to autonomy would be achievable.

A collaborative exploration of game mechanics is a mid-term process. The game's immersive elements provide a flexible surface to test new teaching methods. Moreover, may well provide fostering students' learning processes with detailed feedback (cf. Finseth, 2015). In this way, participatory and collective

learning could unfold through cross-seminar collaboration in the same grade. Due to cross-year collaboration, the population of interest groups available for selection or the available study groups increases statistically

Regular university didactics workshops organised with the Active Floor could help to achieve a higher level of identification as a learning community and to develop a natural culture of participation in teaching and learning that includes an authentic approach to digital media.

Combining the empirical perspectives of self-analysis and vignette technique-based research enables objectifying the respective experience of self-efficacy and becoming aware of the possibilities and limits of participatory practices.

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