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# THE ROLE OF STUDENTS AS ACTIVE PARTICIPANTS OF THE HYBRID LEARNING ENVIRONMENT IN VOCATIONAL EDUCATION

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## Abstract

**Introduction and purpose.** Hybrid learning has become an established form of vocational education rather than a temporary response to a crisis. Yet most scholarly discussion concentrates on the teacher, while the student appears as a recipient of pedagogical influence. This contradicts the logic of hybridity, which requires continuous decisions about the mode of attendance, the pace and the depth of work, and therefore presupposes learner subjectivity. The purpose is to systematise current understanding of the student as an active participant of the

hybrid learning environment in vocational education and to substantiate the pedagogical conditions that support such activity.

**A brief description of the state of knowledge.** Frameworks that explain learner subjectivity are examined: self-determination theory, student agency and the Community of Inquiry model. Five interrelated dimensions of student activity are distinguished: behavioural, cognitive, emotional, social and agentic. The specificity of vocational education is analysed, where the practice-oriented component limits full virtualisation yet opens space for learner initiative. Attention is also given to digital competence, student participation in assessment, and barriers such as the digital divide, status asymmetry between online and on-site participants, and academic integrity.

**Summary.** Active participation does not arise automatically from the provision of choice; it results from deliberate pedagogical design. A system of pedagogical conditions is proposed: transparency of instructional design, parity between modes of participation, priority of collaborative work over content delivery, distributed responsibility for communication, formative assessment, and systematic development of learners' digital competence.

**Keywords: Education; Professional; Students; Learning; Hybrid Learning Environment; Educational Technology; Digital Literacy**

## INTRODUCTION AND PURPOSE

The education systems of most countries have entered a phase in which the combination of on-site and remote components is no longer an emergency measure but an ordinary architecture of the learning process. Systematic reviews of recent years show that hybrid teaching in higher and vocational education has developed into an independent field of research with its own agenda: pedagogical frameworks, technological integration, faculty support, student engagement, assessment practices and learning outcomes [5, 16]. The accumulated body of publications, however, is noticeably asymmetrical. The role of the teacher is described in detail, from requirements for digital competence to models of methodological support [1, 3, 12, 20]; the student, by contrast, most often appears as an object of influence whose "engagement" is measured through quantitative indicators of activity in a learning management system.

This asymmetry has practical consequences. By its nature, the hybrid environment delegates to the learner a series of decisions that in a traditional classroom were made by the

teacher or by the timetable: in which mode to attend, when to work through asynchronous material, at what pace to proceed, and how and with whom to interact. Research shows that students value flexibility precisely because it gives them control over the circumstances of their studies [6, 10]. Yet the same control becomes a source of risk for those who lack skills of self-regulation, planning and digital communication. In other words, hybridity is not neutral: it amplifies both the independence of the prepared student and the vulnerability of the unprepared one.

For vocational education the problem is even sharper. The preparation of a qualified specialist requires practical skills that are difficult or impossible to transfer fully online; at the same time, vocational education has traditionally been oriented towards an activity-based approach in which the learner performs real or realistic tasks. A systematic review of blended learning in vocational education links its effectiveness directly to the level of learner engagement and stresses that the potential of the format is realised only when the student participates actively [16]. Vocational education therefore contains a powerful resource of learner subjectivity, which the hybrid environment may either release or, if poorly designed, reduce to the passive viewing of recordings.

The Ukrainian context adds specific circumstances to this picture. Because of the pandemic and subsequently the full-scale war, Ukrainian educational institutions have passed through a sequence of forced transitions between on-site, distance and blended formats; comparative studies show that the two periods differed in the nature of their challenges and in their consequences for the organisation of teaching [11, 15]. Air-raid alerts, the displacement of students, and unstable electricity and connectivity make hybridity not so much a pedagogical choice as a condition for the continuity of education. The weight of learner independence grows accordingly: where synchronous interaction may be interrupted at any moment, the ability of the student to continue learning independently becomes critical.

**The purpose of the article** is to systematise existing scholarly understanding of the student as an active participant of the hybrid learning environment in vocational education, to identify the principal dimensions and determinants of student activity, and to substantiate the pedagogical conditions that foster it.

To achieve this purpose the following tasks were set: to clarify the conceptual field of hybrid learning and the place of the student within it; to consider the theoretical frameworks that

explain learner subjectivity; to characterise the dimensions of student activity; to analyse the specificity of vocational education; to determine the role of digital competence and of assessment procedures; to systematise the barriers; and to propose a generalised system of pedagogical conditions.

## DESCRIPTION OF THE STATE OF KNOWLEDGE

### 1. The hybrid learning environment: the conceptual field

In current literature the terms «blended», «hybrid» and «flexible» (HyFlex) learning are used partly as synonyms, although the differences between them are substantive and matter for understanding the role of the student.

Blended learning usually denotes a combination of on-site classes with an online component in which the proportion between the two is fixed by the curriculum and is the same for the whole group. Hybrid learning in the narrower sense presupposes that some learners attend in person while others join remotely within the same session (synchronous hybrid learning). The HyFlex model adds the right of choice: the student decides independently in which mode – on site, synchronously online, or asynchronously – to take part in each particular session.

A systematic review covering research on hybrid teaching in higher education shows that three features are common to all definitions: technologies that make simultaneous work with two audiences possible; synchronicity of interaction in real time; and the integration of the on-site and virtual components into a single learning experience [5]. The authors emphasise that the effectiveness of hybrid scenarios is determined not by the fact of technological integration but by the extent to which the pedagogical design prompts students to participate actively.

The observation that is central for the present topic is that as the flexibility of the format grows, so does the volume of decisions delegated to the learner. In the traditional model the student is responsible mainly for completing tasks; in the HyFlex model the student is additionally responsible for the configuration of his or her own learning pathway. This is a qualitatively different role that requires dedicated pedagogical support.

### 2. Theoretical frameworks of learner subjectivity

The explanatory power of self-determination theory for hybrid environments lies in the link it establishes between the quality of engagement and the satisfaction of three basic needs: autonomy, competence and relatedness. A flexible format works in favour of autonomy from the outset, since the possibility of choosing a mode of participation creates a sense of control over

one's studies [10]. The needs for competence and relatedness, however, are satisfied with greater difficulty: the remote participant more often faces uncertainty about personal progress and has restricted access to informal communication. Empirical evidence from vocational education confirms the interdependence of motivation and competence: the perceived value of digital skills and the belief in one's own capability proved to be the strongest correlates of students' actual level of digital competence [18].

The concept of student agency describes the capacity and the readiness of the learner to act purposefully in relation to his or her own learning: to set goals, choose strategies, initiate interaction and adjust actions on the basis of reflection. A study of flexible formats in post-compulsory education found that students displayed agency above all in situations that had not been anticipated by the programme – when circumstances of life, work or health forced them to reorganise their participation [6]. The authors argue that institutions should recognise this unplanned agency as legitimate and build it into course design rather than treat it as a deviation from the norm.

The Community of Inquiry model distinguishes three types of presence: social, cognitive and teaching presence. In a hybrid environment the social presence of remote participants is particularly vulnerable: informal contact is harder to establish, and without deliberate measures such students risk remaining at the periphery of the group. Empirical data confirm that students form connections more readily with peers who share their mode of attendance and considerably less often across modes [5]. Social activity in a hybrid environment is therefore not spontaneous and must be designed.

Self-regulated learning becomes indispensable in the asynchronous component of a hybrid course, which assumes that the learner plans time, selects strategies for working with material and monitors the result. Studies of motivation in blended formats record that students with a higher level of autonomous motivation display greater engagement and deeper processing of content [9, 10]. At the same time a typical behavioural pattern is observed: in the absence of clear guidance, learners tend to complete only the minimum required volume of work [7].

**3. Dimensions of student activity in the hybrid environment**

A synthesis of the available research allows five interrelated dimensions of student activity to be distinguished (Table 1). Empirical research confirms that these dimensions develop unevenly. A comparison of on-site and remote participants of the same session shows that

conceptual understanding of the material may be comparable, whereas the emotional engagement of on-site students is markedly higher [5]. The conclusion is important: equality of access to content does not guarantee equality of learning experience.

A systematic review of the determinants of engagement among vocational education students in blended environments singles out groups of factors that are amenable to pedagogical influence: the structure of the course, the quality of feedback, the character of the tasks and the level of teacher support [17].

**Table 1.** Dimensions of student activity in the hybrid learning environment of vocational education

| Dimension | Content | Typical manifestations | Risks in the absence of support |
|---|---|---|---|
| Behavioural | Regularity and completeness of learning actions | Attendance in the chosen mode, timely submission of work, engagement with asynchronous materials | Formal presence, minimal compliance, procrastination |
| Cognitive | Depth of processing of content | Asking questions, comparing sources, transferring knowledge to practical situations | Superficial acquaintance, mechanical reproduction |
| Emotional | Attitude towards the course and towards learning | Interest, satisfaction, sense of belonging | Boredom, anxiety, alienation of remote participants |
| Social | Interaction with the group and the teacher | Group work, peer review, support of fellow students | Isolation, division of the group into two unconnected subgroups |
| Agentic | Management of one's own learning pathway | Choice of mode of participation, planning, initiating feedback, reflection | Passive following of the timetable, loss of orientation |

This confirms the key proposition of the present section: none of the dimensions of activity is a fixed characteristic of the student; all of them are shaped by the design of the

learning environment.

**4. The specificity of vocational education**

Vocational education has a number of features that alter the configuration of student activity in a hybrid environment.

The first of these features is the practice-oriented component of training: a substantial share of learning outcomes concerns skills that are formed in action – in the workshop, the laboratory or the workplace. Studies of the organisation of physical education under distance learning conditions demonstrate clearly the limits of virtualising practical disciplines: the selection of methods for subjects that require special equipment and motor skills demands dedicated solutions [13]. Similar conclusions apply to any practical preparation: the online component is effective for the theoretical foundation, for case analysis and for preliminary acquaintance with a technology, but it does not replace the direct performance of operations. A review of blended learning in vocational education records this trade-off explicitly: the flexibility of the format increases the accessibility of training but requires compensatory mechanisms for the practical component [16].

The flipped classroom is a second, closely related feature. It is precisely in vocational education that this model acquires its particular logic: theoretical material is processed asynchronously, while the limited and expensive on-site time is devoted to practical work under the supervision of the teacher. Reviews of hybrid teaching rank the flipped classroom among the most effective pedagogical frameworks [5]. This model, however, depends critically on whether the student has completed the asynchronous part: a passive learner makes the very construction of the session impossible.

A third observation is that the type of learning activity matters more than the type of technology. An empirical study of 106 students of vocational and technical programmes showed that the development of digital competence is most strongly associated with collaborative projects and regular short quizzes, whereas passive attendance at online sessions and the viewing of pre-recorded videos show a markedly weaker association; the use of virtual and augmented reality increased confidence in handling tools but did not improve content-creation skills or the understanding of online safety [18]. This result bears directly on the topic of the article: the novelty of a technology does not make the student active – the character of the task does.

A fourth feature is the connection with the professional environment. Hybridity makes it

possible to involve practitioners from industry without their physical relocation, to organise observation of real processes and to analyse cases jointly with employers. Student activity here manifests itself in formulating professionally meaningful questions, in preparing for interaction with specialists and in reflecting on one's own experience.

The motivational profile of learners changes accordingly. Studies of blended learning in applied fields record growth in motivation and in positive attitudes provided that the online component has a clear structure and transparent requirements [7, 8, 9]. For example, the use of digital tools for recording one's own activity in physical education gave learners the opportunity to personalise the educational process and to compare results with their own previous results rather than with those of other students, which had a positive effect on motivation [7]. This example illustrates a more general principle: technology strengthens activity when it transfers to the student control over information about personal progress.

**5. The digital competence of the learner as a condition of subjectivity**

Active participation in a hybrid environment is impossible without established digital competence. A systematic review of research on the digital competence of prospective teachers over a decade shows a persistent unevenness of its components: user-level skills are usually sufficiently developed, whereas digital content creation, problem solving and the pedagogical integration of technology remain weak points [12]. A cross-national study of students of medical specialities in Germany, Ukraine and Kazakhstan revealed a discrepancy between self-assessed digital competence and the level actually documented, which casts doubt on the reliability of self-report instruments and points to the need for objective assessment [15].

Notably, the format of study influences the level of digital skills in an ambiguous way. A comparative study of students trained on site and remotely showed a high level of digital competence in the on-site group, whereas in the remote group improvement covered only particular components [14]. This is a counter-intuitive result that deserves attention: presence in a digital environment does not in itself build digital competence; competence is built by specially organised activity involving the creation of digital products and by support from the teacher.

The distribution of competences according to prior learning experience is equally revealing: learners with no previous exposure to blended formats rate their own operational skills more highly (working with software, troubleshooting), whereas experienced learners show an advantage in developmental competences – creating and publishing digital content and using

technology for learning and research [18]. Experience of hybrid learning thus shifts digital competence from the purely instrumental to the strategic level.

From this follows the relationship recorded in the authors' previous work: the digital competence of the vocational education teacher is a precondition for effective hybrid learning [3], and strategies for developing it require a systemic approach to overcoming the existing challenges [1]. The picture would nonetheless be incomplete without the symmetrical proposition: the digital competence of the student is a precondition of his or her subjectivity. A learner who does not command collaborative tools, cannot organise a personal digital workspace and cannot evaluate sources critically is objectively deprived of the possibility of being an active participant, however well the course has been designed.

The experience of vocational colleges shows that the development of learners' digital competence requires a dedicated strategy embedded in the educational programme rather than reliance on spontaneous acquisition [4].

**6. Assessment and feedback as a space of student participation**

Assessment is the link in which the role of the student most often remains passive, although it is here that the potential for activity is greatest.

A systematic review of hybrid teaching records that structured formative assessment with clear requirements and deadlines substantially reduces procrastination and increases engagement, while a variety of assessment forms – quizzes, online discussions, peer-reviewed assignments, project tasks – gives a fuller picture of progress and allows targeted support [5]. It is significant that each of these forms presupposes a different degree of student participation: from simple response (a quiz) through co-participation in assessment (peer review) to the independent definition of quality criteria (a project). Empirical data from vocational and technical programmes confirm that regular short checks with immediate feedback rank among the most effective formats for developing digital skills [18].

Innovative approaches to monitoring in hybrid learning presuppose a movement from digital tools towards pedagogical reflection [2]: learning analytics, automated checks and digital portfolios make sense only when their results are returned to the learner in a form suitable for drawing independent conclusions. Analytics available to the teacher alone support control; the same data available to the student support self-regulation. A bibliometric analysis of research on artificial intelligence in education shows that it is precisely the strands connected with teaching

quality, motivation and learning outcomes that form the core of the current agenda, whereas technological solutions in themselves remain a means [19].

The question of academic integrity requires separate attention. Asynchronous and remote forms of assessment create conditions in which external supervision is limited. A productive response is not the intensification of control but the redesign of tasks: shifting the emphasis from the reproduction of information towards application, the analysis of specific professional situations, the documentation of the work process and the defence of results in dialogue. Such tasks are difficult to complete non-independently and, by definition, require an active stance from the learner.

**7. Barriers and risks**

Analysis of the sources allows the principal obstacles to active student participation to be systematised (Table 2).

The problem of status asymmetry deserves separate comment. Studies of synchronous hybrid learning cite the testimony of students who describe themselves as «second-class» participants because they cannot be present in the classroom [10]. This is not a technical but a pedagogical problem: it is solved not by the quality of the camera but by the rules of interaction that the teacher establishes and consistently maintains.

The metacognitive barrier has been documented empirically: learners with less digital experience tend to overestimate their basic skills, which is consistent with the classical Dunning-Kruger effect and limits the diagnostic value of self-assessment [15, 18]. The practical implication for vocational education is that entry diagnostics of digital competence should be built on the performance of tasks rather than on questionnaires.

The Ukrainian context adds to the list of barriers factors that are not characteristic of peacetime. A comparative analysis of the implementation of distance learning during the pandemic and under martial law shows that the second wave of transition was different in nature: whereas the pandemic created a problem of scaling, the war created a problem of predictability [11]. Researchers of distance learning in Ukrainian higher education emphasise the need for systemic solutions that ensure the continuity of the educational process under unstable external conditions [15].

**Table 2.** Barriers to active student participation in the hybrid environment and directions for overcoming them

| Group of barriers | Manifestations | Directions for overcoming |
|---|---|---|
| Technological | Unstable connection, lack of devices, equipment failures | Asynchronous duplicates of materials, low-resource alternatives, technical support |
| Status-related | Perception of remote participants as “second-class”, unequal access to the teacher’s attention | Parity rules of participation, moderation of the speaking queue, rotation of roles |
| Social | Division of the group into two unconnected subgroups, isolation | Mixed small groups, joint tasks requiring interaction across modes |
| Regulatory | Procrastination, loss of orientation in the course structure | Transparent calendar, interim deadlines, progress checklists |
| Competence-related | Insufficient digital skills of the learner | Introductory digital literacy module, integration across the whole programme |
| Metacognitive | Overestimation of one’s own digital skills among inexperienced learners | Objective diagnostic tasks instead of self-report |
| Contextual (Ukraine) | Air-raid alerts, displacement, interruptions of electricity supply | Flexible deadlines, offline-accessible materials, duplication of communication channels |

### 8. Pedagogical conditions supporting active student participation

A synthesis of the sources analysed provides grounds for formulating a system of pedagogical conditions under which the student of vocational education genuinely becomes an active participant of the hybrid environment.

The first condition is transparency of instructional design. The learner must understand from the outset the structure of the course, the logic of the distribution between the on-site and online components, the assessment criteria and the consequences of his or her own choice of mode of participation. Transparency is a precondition of responsible choice; without it, flexibility turns into uncertainty.

The second condition is parity between the modes of participation. Remote participants must have equal opportunities to influence the course of a session: to ask questions, to be given the floor, to work in groups. This requires special moderation procedures from the teacher and, where necessary, the involvement of an assistant or of a student moderator drawn from the learners themselves – which is in itself a form of student activity.

The third condition gives priority to collaborative work over content delivery. Since it is precisely collaborative projects and tasks with immediate feedback that correlate most strongly with the development of competences [18], the online component should be designed around productive cooperation rather than around the delivery of content.

The fourth condition is distributed responsibility for communication. Effective hybrid practices delegate part of the organisational roles to students: keeping a record of the session, moderating the chat, preparing a summary for those who could not attend. Such roles simultaneously relieve the teacher and build agency.

The fifth condition concerns formative assessment combined with self- and peer-assessment. Regular feedback with the possibility of revision, student access to data on personal progress, and participation in developing criteria together shift assessment from a regime of control to a regime of learning [2, 5, 17].

The sixth condition is the development of learners' digital competence across the whole programme: not a separate course at the beginning of studies, but a systematic requirement to create digital products, to work in shared environments and to evaluate sources critically within the professional disciplines themselves [4, 12, 18].

The seventh condition is consideration of the practical component. On-site time in vocational education should be reserved above all for what cannot be transferred online; the asynchronous component should serve preparation for practical work and its reflective interpretation [13, 16].

The final condition is teacher preparedness supported at the institutional level. All the conditions listed are realised through the activity of the teacher, whose digital and methodological competence remains a critical factor [1, 3]. The individual readiness of the teacher is nevertheless insufficient: studies of the digital transformation of education emphasise the need to build a resource ecosystem – infrastructure, shared banks of materials and systematic professional development [20]. Student activity is not an alternative to teacher activity; it is its

result.

## CONCLUSIONS

The analysis of the scholarly sources carried out allows the following generalisations to be formulated.

1. The hybrid learning environment objectively expands the volume of decisions delegated to the learner and thereby raises the requirements placed on his or her subjectivity. The role of the student in such an environment is not reduced to the assimilation of content: it encompasses the management of one's own learning pathway, the initiation of interaction and participation in assessment procedures.

2. Student activity is a multidimensional phenomenon in which the behavioural, cognitive, emotional, social and agentic dimensions develop unevenly. In particular, equal access of remote and on-site participants to content does not ensure equality of emotional and social engagement, which calls for deliberate pedagogical measures.

3. In vocational education the potential of student activity is reinforced by the practice-oriented character of training but is at the same time limited by the impossibility of fully virtualising the practical component. The optimal configuration is one in which the asynchronous component provides theoretical preparation and reflection while the on-site component is devoted to the performance of professional actions.

4. The type of learning activity is a stronger determinant of competence development than the type of technology applied: collaborative projects and regular formative monitoring produce a greater effect than passive attendance or the use of immersive technologies without pedagogical support.

5. The digital competence of the learner is a necessary condition of subjectivity and is not formed automatically through presence in a digital environment. It requires specially organised activity involving the creation of digital products and systematic support; at the same time, self-assessment of digital skills is an unreliable diagnostic instrument.

6. Assessment is the most under-used space of student participation. A shift towards formative forms with self-assessment, peer assessment and open student access to data on personal progress simultaneously addresses the problem of engagement and reduces the risks to academic integrity.

**7.** Active student participation does not arise as a side effect of the flexibility of the

format; it is the result of pedagogical design whose key components are transparency of design, parity between modes of participation, distributed responsibility for communication, teacher preparedness and institutional resource support.

**Prospects for further research** are connected with the empirical verification of the proposed system of pedagogical conditions on a sample of vocational education students, with the development of a valid instrument for measuring the agentic dimension of activity, and with the study of the long-term influence of hybrid formats on professional training under unstable external conditions.

**DISCLOSURE SECTION**

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