

Diana Stupar, University of Banja Luka, diana.stupar@aggf.unibl.org
 Dajana Papaz, University of Banja Luka, dajana.papaz@aggf.unibl.org
 Aleksandar Marić, University of Banja Luka, aleksandar.marić@aggf.unibl.org

EVALUATING STUDENT CREATIVE COLLECTIVES IN ARCHITECTURAL EDUCATION: A MIXED-EVIDENCE CASE STUDY OF APLEXMANIA TEAMS

Abstract:

This study examines student creative collectives as semi-professional formations linking architectural education and practice, focusing on micro-level team dynamics. Four APLEXMANIA teams are evaluated across four domains: group formation, extra-curricular learning, visibility networks, and latent capacity. Using a joint display approach, the research integrates team self-assessments, mentor observations, and artefact analysis. Differences between self-reported and observed data emerge as key diagnostic indicators, revealing patterns such as crisis-driven learning and “punctuated gathering,” a discontinuous but persistent rhythm of collaboration. The findings suggest that pedagogical infrastructures can effectively support collaborative capacity, but through multiple *models of cohesion instead of a single developmental trajectory*.

Keywords: Architectural education, Student creative collectives, Communities of practice, Mixed-evidence evaluation, Pedagogical infrastructure.

ЕВАЛУАЦИЈА СТУДЕНТСКИХ КРЕАТИВНИХ КОЛЕКТИВА У АРХИТЕКТОНСКОМ ОБРАЗОВАЊУ: МЈЕШОВИТА СТУДИЈА СЛУЧАЈА APLEXMANIA ТИМОВА

Сажетак:

Ово истраживање анализира „студентске креативне колективе“ као полупрофесионалне формације које премашују јаз између архитектонског образовања и праксе, са фокусом на микро динамику тимова. Четири APLEXMANIA тима евалуирана су кроз четири домена: формирање групе, ваннаставно учење, видљивост на мрежама и латентни капацитет. Примјеном методе заједничког приказа (*joint display*) интегрисани су подаци из самопроцјене тимова, менторских опажања и анализе артефаката. Разлике између самопријављених и посматраних података показују се као важни дијагностички индикатори, откривајући појаве попут учења подстакнутог кризом и „тачастиг окупљања“ - дисконтинуираног, али одрживог ритма сарадње. Резултати показују да педагошке инфраструктуре успјешно развијају колаборативни капацитет кроз више модела кохезије, а не кроз један развојни образац.

Кључне ријечи: архитектонско образовање, студентски креативни колективи, заједнице праксе, евалуација мјешовитих доказа, педагошка инфраструктура.

1. INTRODUCTION

This paper examines student creative collectives as semi-professional formations operating between coursework teams and professional practice. Existing research has demonstrated the institutional value of pedagogical infrastructures such as APLE Lab, but has offered fewer tools for evaluating how teams actually develop within them over time. To address this gap, the study analyses four APLeXMANIA teams across four domains: group dynamics, learning beyond the curriculum, visibility and cultural production, and future capacity. The study does not seek statistical generalization; instead, it offers a transparent comparative evaluation of developmental trajectories within a bounded educational setting.

Theoretical work on university spin-off initiatives in architectural education [1] developed a framework for understanding how spin-off logic, adapted as pedagogical infrastructure, can address structural problems in the discipline. These structural problems are deeply rooted in traditional studio pedagogy, which often actively reproduces individualism and competitive authorship at the expense of collaborative capacity [2], [3]. That analysis operated at the institutional level, demonstrating how APLE Lab at the University of Banja Luka functions as a platform for developing adaptable creative collectives (ACC). It explicitly identified a remaining research agenda: empirical evaluation of how teams that use this infrastructure actually develop over time [1, p. 4].

This paper addresses that agenda by shifting the focus from institutions to teams, specifically to what we term *student creative collectives*: semi-professional formations of students and recent graduates who undertake paid commissions, build collective identity, and navigate professional futures while still formally enrolled in architectural education. These formations occupy an intermediate position between coursework teams and professional collectives. Their relevance is increasing as research shows that many architecture graduates redeploy their competencies across diverse sectors beyond traditional building design [4], [5]. While creative collectives are documented in professional contexts [6], [7], [8] and student teams in educational research, student-led formations operating as semi-professional collectives within educational infrastructure remain conceptually underdefined.

The study examines four collectives operating within APLeXMANIA, one of APLE Lab's program lines, across four analytical areas: how teams form and maintain collaboration; learning processes that happen outside formal curriculum; visibility strategies and the gaps between infrastructure and its activation; and latent capacity for future professional practice, potential that exists but remains unrealized, and that current frameworks do not measure. This last area is the study's original methodological contribution: operationalizing latent capacity through a rubric-based assessment grounded in long-term observation. Methodologically, the study uses two main evidence sources - **structured team self-assessment and long-term mentor-researcher observation** - supplemented by a bounded audit of publicly observable artefacts, integrated through joint display matrices that systematically identify where evidence converges, diverges, and where gaps between self-perception and documented practice serve as diagnostic indicators of development readiness.

2. THEORETICAL FRAMEWORK

2.1. FROM INSTITUTIONAL ANALYSIS TO TEAM-LEVEL EVALUATION

The institutional analysis in [1] established that adaptable creative collectives can emerge within semi-formal pedagogical infrastructure when universities provide dedicated space, mentorship structures, and external partnerships. This section develops evaluation criteria for examining how specific teams grow within that infrastructure, how they form, learn, build visibility, and develop capacity for practices that still don't exist. The theoretical resources reviewed below are not used to re-assert the case for creative collectives, that argument is made in [1], but to guide the development of an evaluation framework tailored to the specific focus: student creative collectives operating within semi-formal educational infrastructure. The framework, presented in Section 3 as four domains (K1–K4), draws on the resources discussed here. Three concepts organize the analysis: student creative collectives as the empirical formation under study; semi-formal pedagogical infrastructure as the institutional context enabling and delimiting their development; and latent capacity as the evaluative horizon that existing frameworks leave unaddressed.

2.2. THEORETICAL RESOURCES

Four bodies of literature offer conceptual tools for assessing creative teams, each highlighting different aspects of team growth but also having limitations that support using a combined approach. These four are selected not to cover all relevant literature - the companion paper [1] provides wider theoretical insight - but because each specifically informs the development of a particular evaluation area.

Collective creativity as emergent property

Cirella [7] explores organizational factors that support creative teams, identifying five key variables: structured processes, work-related team diversity, boundary openness, sufficient resources, and technology support. The main contribution of the framework is differentiating between collective creativity and the sum of individual talents; collective creativity is an emergent property of micro-social systems. For this study, Cirella informs K1 (group dynamics): team composition, skills complementarity, and the conditions that make collaboration both functional and productive. However, Cirella's framework assumes planned team formation within organizations, while student creative collectives typically emerge organically through friendship, coursework, or competition [7].

2.3. INTERACTION AS MECHANISM

Hargadon and Bechky [8], studying professional service firms, identify four types of interactions that trigger collective creativity: help seeking, help giving, reflective reframing, and reinforcing. Their main insight, that creativity shifts from individual to collective through specific interaction patterns, informs both K1 (how teams sustain collaboration) and K2 (how learning occurs). Help seeking involves acknowledging personal shortcomings; help giving involves dedicating attention to others' problems; reflective reframing changes received input instead of simply accepting it, and reinforcing legitimizes the collective process over individual achievement. These interactions describe what happens within effective teams. They do not explain how teams lacking some of these patterns might still develop capacity over time.

2.4. LEARNING THROUGH PARTICIPATION

Lave and Wenger [9] redefine learning as identity transformation achieved through deeper participation in communities of practice, not simply knowledge transfer from expert to beginner. Wenger [10] expands this framework across four dimensions: learning, identity, meaning, and community. In this study, these concepts directly affect K2: horizontal knowledge sharing within and across teams, viewing the mentor as a nearby resource instead of a traditional instructor, and considering the Lab as a community of practice where learning takes place beyond a set curriculum through active engagement. The framework explains how newcomers build capacity through legitimate peripheral participation, key to understanding developmental differences within teams and leadership rotation in the Lab. However, it does not address learning that occurs through crisis, overload, and failure, mechanisms prominently observed in the empirical material but missing from communities-of-practice theory. To understand these mechanisms, it's important to recognize the value of praxis-based learning, where theoretical understanding develops through ongoing engagement with real problems and constraints instead of classroom simulations [11].

2.5. NETWORKS AS PRODUCTIVE INFRASTRUCTURE

Grabher [6] introduces project ecologies - temporary constellations of actors assembled around specific projects, where knowledge is not stored within organizations but created through engagement. Networks serve as resources, not just contexts; value arises through project-specific collaborations involving clients, communities, and cross-sector partners. This framework informs K3 (visibility and cultural production): how teams build and activate networks, how public presence functions as access to larger professional horizons, not only marketing, and why some teams develop extensive local networks without corresponding digital visibility. Grabher's framework assumes professional actors operating in market conditions; student creative collectives navigate networks from an institutional position that is both protected and limited. These frameworks collectively offer analytical tools for understanding how teams operate. However, they do not provide tools for assessing what teams could become [6].

2.6. WHAT EXISTING FRAMEWORKS DO NOT ADDRESS

The less discussed question is what remains afterwards: what capacity is being developed through current engagement that might support practice beyond the conditions that created it. Developmental evaluation literature Patton [12] explicitly argues that classical evaluation doesn't capture emergent systems and that conventional assessment frameworks are designed for stable programs, not

emergent systems - a characterization that directly applies to semi-formal creative collectives with trajectories that are neither predetermined nor fully self-directed. This temporal aspect motivates the study's fourth evaluation domain and the operationalization of latent capacity as unrealized but observable potential. In this sense, Patton is used here not as a substitute for statistical validation, but as a methodological justification for evaluating emergent, adaptive, and context-dependent formations through iterative, multi-source evidence. This is particularly relevant in settings where roles, outputs, and developmental trajectories remain unstable, and where the evaluator may legitimately occupy an informed insider position within the evolving intervention.

A second underexplored area concerns categorical fit. Student creative collectives operate between formal education and professional practice: voluntarily sustained, institutionally supported but not mandated, professionally engaged but not yet formalized [1]. This positioning creates dynamics that existing frameworks are not designed to capture.

Similarly, existing models assume either sustained organizational presence or discrete project-bounded engagement, leaving little room for the irregular collaborative rhythms that characterize student groups navigating simultaneous educational and professional commitments.

These limitations do not invalidate the theoretical resources reviewed; they remain essential for understanding group dynamics, learning, and visibility. But they do justify a combined evaluation framework adapted to conditions that no single existing model was designed to address.

3. METHODOLOGY

The theoretical review identified organizational conditions, interaction mechanisms, learning processes, and network configurations as key factors for assessing creative collectives [2]–[11], while also showing that no existing framework combines these factors for semi-formal educational settings or considers future capacity as an evaluation category. This guides the methodological approach used here.

3.1. RESEARCH DESIGN AND UNITS OF ANALYSIS

This study is designed as a comparative multiple-case study focusing on the development of student creative collectives operating within the semi-formal pedagogical infrastructure of APLE Lab, specifically the APLExMANIA program line. The primary unit of analysis is the team, not the individual participant, since the study examines collaborative formations as collective developmental entities within shared pedagogical infrastructure. The aim is not prediction but diagnostic evaluation: to assess how teams form, learn, build visibility and networks, and develop capacity for future professional practice. This design intentionally foregoes statistical generalization; as Patton [12] argues, developmental evaluation of emergent systems requires interpretive depth, not quantitative breadth that conventional assessment frameworks — designed for stable programs with fixed populations — are built to produce.

Methodologically, the study follows a mixed-evidence logic, combining two primary sources with supplementary artefact verification—a triangulated approach that integrates (i) structured self-assessment data from a questionnaire, (ii) longitudinal mentor-researcher observations, and (iii) a bounded audit of externally observable traces and artefacts where available. This method aims to strengthen interpretation by examining convergence and divergence across evidence types and identifying gaps between how teams describe themselves and how their trajectories manifest in practice.

The empirical units of analysis are four teams operating within APLExMANIA during the 2024–2026 period. All members are enrolled students, undergraduate or master's level, representing the full current APLExMANIA cohort, and all teams are functioning within the program line during this period. The four teams include different developmental stages and entry pathways, ranging from a group formed during a hackathon competition to a team with seven years of continuous collaboration. This purposeful sampling enables cross-case comparison of developmental trajectories under a shared infrastructural context while capturing variation in collaboration duration, accumulated project experience, and capacity-building patterns.

3.2. EVALUATION FRAMEWORK (K1-K4)

All data are organized and interpreted through four analytical domains, which serve as the study's evaluation criteria. The domains draw on the theoretical resources reviewed in Section 2, adapted to the specific conditions of student creative collectives within semi-formal educational infrastructure.

K1 - group dynamics and formation: team composition and complementarity, role differentiation, decision-making patterns, conflicts and tensions, interpersonal microclimate. Informed by

organizational conditions for collective creativity [7] and interaction typology [8], with attention to organic formation processes absent from those frameworks.

K2 - learning beyond the curriculum: peer learning, help-seeking and help-giving, learning through crises and deadlines, mentor-supported development within a community-of-practice environment. Informed by legitimate peripheral participation [9] and the dimensions of learning, identity, meaning, and community [10].

K3 - visibility and cultural production: visibility infrastructure, consistency in public engagement, narrative and branding strategies, networks - both digital and local. Informed by project ecologies [6], where networks serve as productive resources. This area differentiates between having visibility infrastructure and actively using it, a distinction that proved necessary during data analysis.

K4 - future capacity and trajectories: this domain addresses the time-related limitation described in Section 2.3 by activating latent capacity, potential that is unseen but can be observed, through a four-level classification (**Low** / **Local** / **Growing** / **High**).

This domain illustrates a progression from reactive to strategic positioning. At **Low**, teams do not articulate a shared vision, do not recognize their competencies as transferable, and take no real steps toward formalizing their efforts. **Local** describes teams whose vision and networks are limited by immediate context, faculty, city, personal acquaintances, without awareness of broader possibilities. **Growing** captures teams that have potential they do not fully realize yet, with an expanding but uneven perspective, and whose actions toward the future are genuine but delayed by structural barriers, not developmental deficits. At **High**, teams articulate clear plans, accurately understand their position relative to broader markets, recognize systemic gaps, not just immediate ones, and pursue formalization with specific timelines.

These levels are evaluated based on five indicators: (i) articulation of vision, (ii) self-assessment of competence, (iii) geographic scope, (iv) identification of gaps, and (v) steps toward formalization. Each team assessment in Section 4.4 is supported by clear reference to these indicators.

3.3. DATA SOURCES

The study relies on two primary data sources: structured team self-assessment, and longitudinal mentor-researcher observation, supplemented by artefact traces where independently verifiable evidence is available.

The questionnaire contains 31 items organized into eight sections: team formation and Lab entry (Section 1, 4 items); learning and competence development (Section 2, 3 items); projects, practice domains, and activity formats (Section 3, 3 items); visibility and organizational infrastructure (Section 4, 2 items); networks, collaborations, and partnerships (Section 5, 4 items); Lab as a community (Section 6, 3 items); future trajectories, formalization, and support needs (Section 7, 9 items); and overall reflection (Section 8, 3 items). The instrument was developed deductively from the study's analytical framework (K1-K4) and from the theoretical factors identified in the literature review. Instead of measuring isolated individual attitudes, the questionnaire was designed to capture team-level claims about formation, learning, visibility, and future orientation. Its eight sections therefore function as an operational bridge between the conceptual framework and the empirical material later organized through the K1-K4 domains.

Items include checklist questions (e.g., website, Instagram, logo, portfolio), open-ended reflections (e.g., reasons for missing infrastructure), and future-oriented prompts (e.g., professional vision before and after Lab). Teams completed the instrument together through joint discussion, producing a single response per team. This mode of administration was chosen because the primary unit of analysis in the study is the team, not the individual member. In total, all 14 student participants took part in the self-assessment process, but responses were recorded and analyzed as collective team-level statements, weighting or averaging between members was therefore neither applicable nor necessary. Mentor-researcher observations were not incorporated into the questionnaire and were not weighted against team responses; they were treated as a separate longitudinal evidence source and integrated only during the joint-display stage. The questionnaire captures identity claims, perceived constraints, and declared strategies; it does not record dynamics that develop over time. *The full instrument is available from the authors upon request.*

Mentor-researcher observation offers long-term evidence accumulated over a two-year period of participatory engagement. Based on structured field notes kept throughout the observation, this source reveals what questionnaires systematically overlook: how teams resolve disagreements without outside help, how engagement intensity varies, how learning moments are triggered by deadlines or crises, who withdraws and who makes up for it. The mentor's simultaneous role as infrastructure builder and observer is perceived as an informed insider position - a source of contextual depth managed through structured integration instead of claims of neutrality.

Artefacts and traces serve as supplementary verification, mainly for K3 (visibility), where publicly observable evidence allows independent confirmation of self-reported infrastructure, and for parts of K4 (future capacity), where formalization steps and public engagement leave documentable traces. This includes websites, social media profiles, competition entries, public talks, and signed work. Availability varies across teams: some keep strong public traces, while others intentionally minimize them. The study uses a bounded trace audit approach: inaccessible traces are coded as missing, not negative indicators; analysis focuses on verifiable status (e.g., domain active/inactive, posting rhythm).

3.4. DATA INTEGRATION AND ANALYSIS

Questionnaire items were mapped onto evaluation domains prior to analysis:

Table 1. Analytical domains and questionnaire section mapping

K-DOMAIN	PRIMARY SECTIONS	CONTENT
K1 - Group dynamics	Sections 1, 8	Formation, roles, decision-making, self-identification
K2 - Learning	Sections 2, 6	Competencies, peer learning, Lab as community
K3 - Visibility	Sections 3, 4, 5	Projects, visibility infrastructure, networks
K4 - Future capacity	Sections 7, 8	Vision, formalization, support needs, reflection

This mapping was established before interpretation in order to ensure that each questionnaire section contributed analytically to one or more of the four domains, while allowing limited cross-coding where responses spanned multiple developmental areas. The mapping does not imply a one-to-one correspondence between sections and domains; it structures the primary analytical orientation of each section while preserving cross-domain interpretation where conceptually necessary.

Data collection followed a structured sequence: administering questionnaires to each team collectively; consolidating mentor-researcher field knowledge into domain-structured observation notes (K1–K4), emphasizing events and patterns that questionnaires systematically overlook; conducting bounded trace audits to document verifiable public traces per team; and preparing joint display integration tables.

Each source is first analyzed separately using the K1–K4 framework as the coding structure. Questionnaire items are summarized descriptively for checklist responses and coded qualitatively for open-ended answers, with cross-coding allowed when responses span multiple domains. Mentor observation is coded as domain-aligned longitudinal indicators, conflict handling, role shifts, engagement fluctuation, crisis-triggered learning, maintaining consistency with questionnaire claims.

Findings are then combined using joint display matrices organized by K1–K4. For each domain, the display compares what teams claim (questionnaire), what longitudinal evidence shows (mentor observation), and what external traces support (artefacts, when available). The triangulation is integrative, not confirmatory: convergence is noted when sources align; divergence is recorded when they conflict; gaps between self-perception and documented practice are seen as diagnostic indicators instead of measurement error. This procedure is consistent with a developmental-evaluation logic, in which divergence between sources is treated not only as inconsistency but also as potentially meaningful evidence of emergent capacity, incomplete self-recognition, or uneven developmental maturation. The gap is especially useful for K3 and K4, where visibility infrastructure and future-oriented actions often differ from self-reported positions.

3.5. RELIABILITY AND LIMITATIONS

The mentor-researcher holds an informed insider role: acting simultaneously as infrastructure builder, mentor, and researcher, offers continuous access and contextual insight that external observers lack, but it also introduces the potential for interpretive bias. The study addresses this through structural instead of rhetorical methods. All interpretations are grounded in the K1–K4 framework and displayed via joint matrices, ensuring each claim's evidential basis is traceable to specific sources. K4 latent capacity assessments require a written justification based on five rubric indicators, thereby reducing impressionistic scoring. When artefact traces are missing, they are marked as such and are not inferred from other sources.

Three limitations structure the present study. First, the sample: four teams, fourteen individuals, and one institutional setting. It supports detailed team-level comparison, but not statistical inference. This is consistent with the study's design as a bounded comparative multiple-case study, not an inferential population study. Second, the dual role of mentor-researcher offers depth but cannot

entirely eliminate positional bias despite the safeguards described above. Third, artefact availability varies across teams and domains: the bounded trace audit manages this through consistent coding rules and clear handling of missing data; however, the third evidence source remains stronger for K3 than for other domains. Teams are considered identifiable learning communities within a shared institutional context. Sensitive internal documents, income distribution, contracts, and internal coordination are not reported without explicit team approval. When evidence is derived from public sources, the analysis focuses on functional patterns rather than individual profiling.

4. RESULTS

4.1. TEAM PROFILES

Table 1. Comparative profiles of the APLExMANIA teams

	ANIA CREATIVE STUDIO	TRIANGLE	STUDIO 43	JAMM
PERIOD	2019–present	2022–present	2018–present	2025–present
MEMBERS	4: AM, NP, IK, AŠ ; (final year / graduating)	3: AB, BB, PL ; (3rd year undergraduate)	3+1: SL, NHM, AJ ; (master's students)	4: JM, AP, MT, MD ; (2nd/3rd year undergraduate)
KEY OUTPUTS	Mikro Eko Kuća (2nd place), Piranski dani, A25 panel, STEPGRAD ×2, FF carousel, LANACO/Cirkus models, Arhistudent platform, web design, visual communications	Confucius Institute interior, ISTRa, Filozofski Hibrid HAB, Vikendica Kovač, ARCHITECTON 1st place, APLE Fest organization	Park BL (2nd prize), Münchwilen (publication), interiors (Morenos, Šobot, stan M), FreshWave scenography, Studio ATV, Slatina house	ARCHITECTON 2 nd place (National Theatre extension)
DOMAINS	Architecture, product design, web, visual communication, social engagement, cross-sector	Architecture, product design, visual communication, tutoring, cross-sector, digital (VR, AI)	Architecture, product design, social engagement, cross-sector, scenography	Architecture, product design, visual communication, social engagement, tutoring, cross-sector
COLLABORATIVE PHASE	Transitional (7 years, currently recalibrating)	Consolidation (3 years, accelerating)	Professional entry (7 years, entering independent practice)	Formation (formed during competition, building cohesion)

Four teams, fourteen students, range from second-year undergraduates to master's candidates nearing graduation. Project portfolios include architectural design, product design, scenography, visual communication, web development, social engagement, and cross-sector collaboration. The differences in portfolio depth, from seven years of experience to a single competition entry, reflect the collaborative phase instead of ambition or capacity, as shown by the K1–K4 analysis. These four teams make up the entire APLExMANIA cohort during the study period. The program, launched in 2024 within the broader APLE Lab infrastructure, plans to renew the cohort through every two-year competition cycle as current teams move toward graduation and formalization.

4.2. GROUP DYNAMICS AND FORMATION

Table 2. K1 Domain Analysis: group dynamics and formation across teams

DIMENSION	TEAM	SELF-REPORT	MENTOR OBSERVATION	GAP
FORMATION AND LAB ENTRY	ANIA	Organic through coursework; founding Lab involvement — "I was there when it was written"	Pioneers, identity tied to Lab origins	Convergence
	Triangle	Organic friendship; hackathon winners (Lab entry)	Hackathon as catalyst not origin; cohesion extends beyond competition	Convergence
	Studio 43	Organic, worked in offices, resigned; mentor invitation over coffee	Most deliberate pathway - years in top city offices, conscious departure	Convergence
	JAMM	Only team formed during hackathon itself	Deeper bonds forming through daily proximity beyond competition	Mild gap
STRUCTURE	ANIA	Specialized roles, hybrid decision-making (consensus + one leads + project-based)	Functional economy of time; projects proceed without full assembly	Convergence
	Triangle	Partial specialization, consensus only. Gaps: finances, marketing blank	Efficient division without deep intimacy; gaps reflect phase not dysfunction	Partial gap
	Studio 43	"All/everything," consensus + project leads	Deliberate rejection of specialization; hours at single screen together	Divergence: survey misses intentionality
	JAMM	Partial roles, consensus + project leads. Gaps: PM, finances, marketing blank	Implicit leadership by two strongest members; others growing through proximity	Gap: survey egalitarian, practice asymmetric
INTERPERSONAL DYNAMICS	ANIA	"Challenging to establish balance"	Crisis: withdrawal, delayed degrees, premature formalization attempt two years prior. Four distinct personalities, "breakable alone, collectively resilient"	Gap: survey does not capture current crisis
	Triangle	No conflict data	Overloaded but persisting; reliable without deep personal bonds. Professional efficiency, not three best friends	Gap: invisible strain
	Studio 43	No conflict data	Productive disagreement between members; conflict as deliberative process. "Gentle introverts" who learned to navigate Lab chaos	Gap: survey hides productive conflict
	JAMM	No conflict data	Developmental asymmetry managed through proximity; mentor not concerned	—
SELF-IDENTIFICATION	ANIA	Creative collective	—	—
	Triangle	Spin-off team	Read companion paper, responded to its terminology	—
	Studio 43	Startup + creative collective + emerging team (three simultaneous)	—	—
	JAMM	Emerging team + student team	—	—

Three patterns emerge across teams.

First, formation pathways diverge, three teams formed organically through years of shared coursework; one formed during a competition, but mentor observation qualifies this divergence: JAMM's hackathon formation acts as a catalyst for cohesion that extends beyond the competition context, suggesting that the organic versus assembled distinction is less important than the continuity

after formation. Lab entry pathways also vary: founding involvement (ANIA), success in competition (Triangle, JAMM), and mentor invitation (Studio 43), three distinct routes into the same infrastructure.

Second, structural organization correlates with the team phase but not in a straight line. ANIA, the longest-established, shows the highest role differentiation; Studio 43, the most professionally experienced, deliberately resists it. This difference between survey responses ("all/everything") and observed practice (intentional collective deliberation) shows why self-report alone cannot fully capture team dynamics. Studio 43's refusal of specialization is a conscious choice, not a developmental flaw. Younger teams have gaps in business functions like finance and marketing, which don't indicate dysfunction but show their developmental stage.

Third, interpersonal dynamics are the area where self-assessment and mentor observation most consistently differ. Questionnaire tools do not capture ANIA's current transitional crisis, Triangle's mounting overload, or Studio 43's effective handling of disagreement. This ongoing gap highlights the need for multiple evidence sources: key aspects of team development remain hidden if only relying on self-report.

Another insight comes from self-identification. When asked to categorize their team, no two groups chose the same term: responses range from "creative collective" to "spin-off team" to using three categories at once to "emerging + student team." This variation does not indicate measurement failure but reflects real categorical inadequacy: current terminology does not adequately describe student groups operating within semi-formal educational settings. The term "student creative collectives" used in this study addresses this gap.

4.3. LEARNING BEYOND THE CURRICULUM

Table 4. K2 Domain Analysis: learning processes, support and crisis

DIMENSION	TEAM	SELF-REPORT	MENTOR OBSERVATION	GAP
KNOWLEDGE CIRCULATION	ANIA	Concrete skills: web design, event organisation, PM, client communication. "Healthy competitiveness that motivates." Lab as "opportunity for a chance"	AM - Studio 43 mutual exchange. ANIA formerly Lab exemplar; Triangle now occupies that role. Punctuated presence: "AM settled in, IK and AS visit, NP tries Fridays at 5pm"	Convergence on skills; gap on role rotation — survey does not register shift from exemplar to peripheral
	TRIANGLE	Applied theory in practice, client communication, decision speed, self-confidence. "We exchange most with JAMM." Present almost daily, "give support and inspiration to other teams"	Current Lab hub: first choice for questions, model-making help, technical advice. "Three generous, selfless students who always help everyone"	Convergence: Triangle - JAMM confirmed bilaterally. Depth: mentor sees them giving more than receiving
	STUDIO 43	"We developed the skill to work in a loud room." Community with "nice energy, workspace, space for experiment, space for permitted mistakes"	Serious adaptation: focused work afternoons, headphones for faculty meetings, engage when overhearing relevant discussions. Scene construction volunteer: 10 years staging experience offered spontaneously	Divergence: humorous deflection in survey masks substantive adaptation documented by mentor
	JAMM	Generic: teamwork, cooperation, fast decisions, working under pressure. Value lectures and workshops	Growing through Triangle proximity, privately inseparable, seek consultations on mutual work. Makerspace operators within Lab infrastructure	Partial gap: survey generic, mentor sees specific learning channel (Triangle) and infrastructure role
	ANIA	"We often consult mentors or experienced	Mentor strategically sent NP to different offices to	Convergence: mentor as strategic

MENTOR AND SUPPORT STRUCTURES		colleagues as reference basis." Lab as workspace and community	learn management styles. "Arhi mama Di." Advisory on pricing, offers, client relations	resource, not instructor
	TRIANGLE	Mentor explicitly named: "introduced us to a new working model beyond classical teaching."	Mentor demonstrated offer process for primary school, walked through paperwork, announced "now communicate independently": they did not follow through (exams)	Convergence on naming; gap on follow-through, learning initiated but not completed
	STUDIO 43	Names ANIA members as peer-mentors ("MT and AM"), Lab as institution. Does not name formal mentor	Igor invited to Lab. Mentor pushes toward experiment, art competitions. Preparing teaching contracts	Divergence: survey foregrounds peer and institution, not formal mentorship
	JAMM	"Professors as mentors brought experience and knowledge from different spheres"	Mentor monitoring, "not yet giving concrete tasks, will start in summer." Observing, absorbing	Gap: survey emphasizes mentorship still in early phase
CRISIS-DRIVEN LEARNING	ANIA	"Extremely challenging to establish balance" between classical and experimental	Exhaustion from overcommitment to entire faculty. Currently learning priorities: what they want, what serves them. Premature formalization attempt two years prior generated resistance	Gap: survey hints, mentor sees fundamental reset
	TRIANGLE	No crisis data in survey; "collaborative atmosphere"	Overloaded from exams and APLE Fest obligations, everyone rides them. Persisting: designing three-day workshop and exhibitions	Gap: survey positive, mentor sees accumulating strain
	STUDIO 43	Balance question: "YES" (no elaboration)	Breaking point: resigned from offices, returned from Brno exchange. "Are we ready?" Set 6-month earnings target, achieved in 4 months	Gap: survey avoids, mentor documents pivotal professional transition
	JAMM	"Ability to work under time pressure"	Discovered that concrete deadlines and adrenaline unlock capacity, "they can produce wonders." Hackathon as capability revelation	Convergence: both sources recognise deadline-driven learning

K2 findings reveal learning processes unfold through three distinct mechanisms, none of which traditional curricular assessment would detect.

Knowledge circulation follows patterns invisible to individual team self-assessment. Survey responses identify specific skills acquired, such as client communication, project management, and applied design, but cannot capture how the Lab's learning ecology shifts over time. Mentor observation documents role rotation: ANIA previously functioned as a peer reference point for younger students; Triangle now occupies that role, with JAMM developing through daily proximity to them. This circulation occurs without formal designation, no team is assigned exemplar status, suggesting that learning infrastructure creates its own internal hierarchies through practice without explicit instruction.

Mentor-as-resource functions differently across developmental stages. ANIA, the most established, uses the mentor for strategic guidance on topics like pricing, client management, and career planning. Triangle receives structured task introductions with increasing autonomy. Studio 43 does not identify a formal mentor in their survey at all, emphasizing peer relationships and institutional context instead: a finding consistent with their professional maturity and independent decision-making. JAMM describes mentorship as important, while the mentor reports holding back and not

yet assigning specific tasks. This phased approach, from observation to structured initiation and strategic advice, forms a developmental sequence that no single team's self-report fully captures.

Crisis-driven learning is the area where self-assessment and mentor observation differ most noticeably. Three out of four teams give minimal or evasive survey responses regarding difficulty, challenge, or failure. Mentor observation, however, documents significant crises that lead to valuable learning in each case: exhaustion and recalibration (ANIA), accumulating overload managed through persistence (Triangle), professional rupture and reinvention (Studio 43), and capacity discovery under competitive pressure (JAMM). This clear divergence suggests that crisis might serve as a teaching mechanism within semi-formal structures, but one that participants either do not recognize as a form of learning or choose not to report as such.

4.4. VISIBILITY AND CULTURAL PRODUCTION

Table 5. K3 Domain Analysis: visibility and networks and public activation

DIMENSION	TEAM	SELF-REPORT	MENTOR OBSERVATION	ARTEFACT /TRACE	GAP
Visibility infrastructure	ANIA	Website ("rahmetli" — domain lapsed), Instagram, logo. "We'll fix it"	AM built 7-year profile, Arhistudent regional reach. Domain payment renewed during data collection	Website reactivating. IG active (AM personal)	Gap → convergence: recovering
	Triangle	Instagram, Facebook, logo. "Lack of time"	Created profiles, zero posts. Logo in draft versions	IG/FB exist, zero content	Divergence: infrastructure exists, activation absent
	Studio 43	"Nothing." "Lack of time"	Deliberate sequencing: clients → commissions → registration → then branding. Sign drawings as "Studio 43"	Signed professional drawings, public talks	Divergence: "nothing" vs. professional reputation circulating through work
	JAMM	Nothing marked. "In the process of discovering collective identity"	Too early for branding, focus on learning	None	Convergence: early phase, both sources agree
Networks and collaborations	ANIA	Individuals, artists, mentors, students. Collaboration with DM, art competition. "Through mentors or recommendations"	Regional reach through Arhistudent. AM ↔ Studio 43 exchange. ARTxARH line jointly with Studio 43	Arhistudent platform, Cirkus model, Competition entries	Convergence: networks active, regional
	Triangle	Offices, independents, artists, mentors, students. "APPLE Lab network or independently"	Peer hub — everyone asks them. AB's Montenegrin nationality as regional link	APPLE Fest (in progress)	Convergence: give more than receive
	Studio 43	Independents, artists, product designers, mentors, students. "Recommendations, now also Lab"	Professional network from office years. Friends become clients. Mentor concerned about local ceiling	Client portfolio, Münchwilen publication, competitions	Convergence locally; gap on horizon - mentor sees ceiling they do not
	JAMM	Offices, artists, mentors, students. P15: "/" (blank)	Growing through Triangle proximity. Cross-team bond (BB+AP)	ARCHITECT ON 2nd place	Gap: blank on collaboration pathway, mentor sees organic networking
Public activation	ANIA	Pop-Up Cafe, archi(E)scape, Inspirational Talks, Noći arhitekture, START-UP RUN, 7×7, Reality Bites...	Until recently did everything for faculty → exhaustion. Now recalibrating	Piranski dani, STEPGRAD, A25 panel	Convergence: extensive but unsustainable
	Triangle	Fragments of Rome, ARCHIMAN Zagreb, CAMP UP, RED kiosk, Sarajevo events, SFERA,	Pull APPLE Fest + exams simultaneously = overload risk	Interiors work, APPLE Fest	Convergence: high activation, sustainability risk

		Beograd forum, START-UP RUN			
	Studio 43	APPLE Fest panel, BIH Biennale, Skela competition, lectures, Piranesi jury, fountain project	Appearing on "trauma" panel, mentor pushing beyond comfort zone. Two art competitions, potential Montenegro consortium	FreshWave scenography, competition entries, publications	Convergence: professional base expanding into experimental
	JAMM	ARCHITECTON, ARCHIMAN, ARHIESCAPE, CAMP UP, RED kiosk, Inspirational Talks, Sarajevo, SFERA	Participate, do not yet lead. Beginning initiatives (Jelena → ARTxARH)	ARCHITECTON entry	Gap: activation through participation not leadership (yet)

K3 is the domain where artefact evidence functions as independent verification, and where the gap between self-report and observable practice proves most diagnostically useful.

The main discovery relates to what the companion paper [1] called the visibility gap: the lack of digital presence among teams that are otherwise active and professionally engaged. This study clarifies that point. Studio 43 reports "nothing" across all visibility categories but maintains a professional reputation through signed drawings, completed commissions, public lectures, and jury participation. Triangle reports Instagram and Facebook presence but has zero posts. These conditions are not the same: Studio 43 intentionally sequences its reputation-building through work before investing in branding, while Triangle's empty profiles indicate infrastructure set up without a clear activation strategy. The difference between having visibility infrastructure and actually activating it, as designed in K3, is crucial for analysis.

ANIA's trajectory demonstrates a third pattern: visibility infrastructure that existed, lapsed, and is now recovering. The team's regional digital presence, built over seven years through one member's sustained social media activity and the Arhistudent platform, is an asset whose reach extends beyond local networks. This asset was underutilized during the team's transitional period but showed signs of reactivation during data collection. The artefact trail confirms this independently: domain payment was renewed, although the website remained non-functional at the time of writing.

Public activation intensity does not correlate with visibility infrastructure. ANIA and Triangle demonstrate extensive event participation: workshops, festivals, competitions, and public talks across multiple cities, while maintaining minimal or lapsed digital presence. Studio 43 activates selectively but increasingly outside conventional architectural channels: art competitions, scenography, and cross-disciplinary panels. JAMM participates actively in structured events but has not yet initiated or led. The pattern suggests that public engagement within Lab infrastructure precedes and potentially substitutes for digital visibility, teams build reputation through physical presence and institutional participation before investing in online representation.

Mentor observation introduces a dimension that self-report and artefact evidence lack: sustainability. The two teams with the highest activation levels (ANIA, Triangle) are also identified by the mentor as overwhelmed. Extensive public engagement, carried out voluntarily alongside academic duties, creates cumulative stress that is hidden in event lists but observable over time. This has implications for infrastructure design: activation without ongoing sustainability monitoring may worsen existing exhaustion patterns seen in K2.

4.5. FUTURE CAPACITY AND TRAJECTORIES

Table 6. K4 Domain Analysis: vision, formalisation, and future capacity across teams

DIMENSION	TEAM	SELF-REPORT	MENTOR OBSERVATION	GAP
VISION	ANIA	YouTube link deflection, "we're still imagining it :D." All future roles checked + gaming, film	HAVE a vision: brand continuity, distributed collaboration, possibly different continents. Currently in withdrawal	Gap: largest accumulated capacity, least articulated vision
	TRIANGLE	"Discipline is broad and adaptable." Selective roles: independent practice, office, multi-practice, teaching	Thinking about sole proprietorship next year. Moving toward goals without drama	Convergence: realistic, grounded
	STUDIO 43	"Always knew we'd work together, just when and how." Vision: "sustainable firm doing beautiful projects." Selective roles + teaching, social engagement	Extends beyond stated: teaching, art competitions, cross-sector. Reached office-equivalent earnings in 4 months	Convergence on baseline; gap on scope — mentor sees broader
	JAMM	"Discipline versatile... could work in multiple spheres." All future roles checked	"In a year or two they'll be dangerous." Makerspace operators, initiative emerging	Gap: generic survey, high mentor-assessed potential
FORMALISATION	ANIA	"Baby steps... first everyone needs to graduate"	Degrees first. Premature attempt 2 years ago generated resistance	Convergence: consciously postponing
	Triangle	"Considering it, registration opens doors"	Sole proprietorship in 1–2 years	Convergence: realistic timeline
	Studio 43	"That idea has held us together for years. Hopefully soon"	Closest: licenses held, awaiting commission to justify costs. Problem: no institutional address	Convergence on intent; systemic barrier
	JAMM	"YES"	May formalise before older teams	Gap: monosyllabic, mentor sees acceleration
HORIZON	ANIA	"Artistic and social engagement." Needs: everything + "diploma and time"	Do not see themselves as EU platform despite regional reach	Gap: largest capacity, lowest horizon self-perception
	Triangle	"Regular presentation after each project." Needs: selective (legal, financial, mentoring, equipment)	Beyond local, regionally certain	Convergence: realistic, open
	Studio 43	"Lab opened faculty engagement: hadn't considered before." Needs: minimal (legal, finances, equipment, admin)	Extending: art competitions, Montenegro, teaching. Mentor pushes broader	Gap: see local+, mentor sees more
	JAMM	"Management in architecture, design and marketing." Needs: everything	Engaged, mentor not concerned	Convergence: aware, optimistic

K4 represents the study's original evaluative contribution: assessing not what teams currently do but what they are building capacity to become.

Formalization pathways reveal systemic instead of developmental barriers. All teams affirm their intent; none possess a clear pathway. Available options, such as a limited liability company or sole proprietorship, reflect the regulatory context in [1]. Studio 43 approaches registration most closely but encounters an institutional constraint: faculty premises cannot host private enterprise.

Table 7. Latent capacity assessment of APLExMANIA teams

TEAM	LEVEL	JUSTIFICATION
ANIA	2 (Local) → potential 4	Largest gap between actual capacity and self-perception. Vision exists (Ind. 1) but is deflected; broad skills (Ind. 2) but regional reach isn't seen as strategic (Ind. 3); immediate barriers are recognized but not structural opportunities (Ind. 4); action is delayed (Ind. 5).
TRIANGLE	3 (Growing)	Methodical progression. Realistic vision (Ind. 1), accurate self-assessment (Ind. 2), regional horizon expansion (Ind. 3), focused gap identification (Ind. 4), active pursuit of formalization (Ind. 5). Risk: overload or slipping into conventional practice.
STUDIO 43	3 (Growing)	Strongest professional foundation. Clear yet subtle vision (Ind. 1), mature competence evaluation (Ind. 2), locally rooted but expanding (Ind. 3), systemic gaps identified (Ind. 4), most proactive toward registration (Ind. 5). Constraint: institutional address.
JAMM	2 (Local) → fast toward 3	Youngest but highly competitive drive on Ind. 4–5 indicates a trajectory surpassing the current level. Vision is generic (Ind. 1), competence is undifferentiated (Ind. 2), horizon is too early (Ind. 3), but engagement and initiative are already evident.

5. DISCUSSION

5.1. CROSS-CUTTING FINDINGS

Analysis across four evaluation domains reveals patterns that go beyond individual dimensions. Three key findings stand out: the diagnostic importance of gaps between self-assessment and observation; the development of irregular collaborative rhythms as a structural feature instead of a deficiency; and the coexistence of different cohesion models within shared infrastructure.

The gap as a diagnostic tool. The joint display approach was created to spot convergence and divergence among evidence sources. In practice, divergence turned out to be more useful for analysis. In all areas, self-reporting consistently underestimates dynamics that longitudinal observation reveals: current crisis (K1), crisis-driven learning (K2), the difference between having and activating visibility infrastructure (K3), and the inverse link between accumulated capacity and self-perceived horizon (K4). This pattern indicates that the gap is not just measurement noise but a structural feature of semi-formal creative collectives - formations where participants are simultaneously building skills and developing the self-understanding necessary to recognize those skills. According to Lave and Wenger's framework, this gap represents the latency of identity transformation: teams are practicing collaborative practices before they have the professional vocabulary to articulate them [9]. Furthermore, from a developmental evaluation standpoint, this divergence is not a measurement error but the key sign of an emerging system that traditional assessments overlook. The practical implication is counterintuitive: mentorship intervention may be most necessary where teams seem most established.

Punctuated gathering. Mentor observation reveals a pattern across all four teams: periodic intensification followed by dispersal, with coherence maintained through intermittent convergence, not only sustained daily presence. Teams work together when coursework permits, when projects demand it, when social connection is sought, including monthly game nights with no productive agenda, then separate and reconvene. We call this punctuated gathering. While Wenger [10] views ongoing participation as the key to deepening engagement, and Grabher [6] describes project ecologies as temporary constellations that completely dissolve after project completion, punctuated gathering reveals a third logic. These student formations are rhythmically temporary but relationally lasting. Discontinuity is not a failure of the community of practice but its adaptive survival mechanism within overlapping institutional and professional constraints. This finding challenges assumptions in spin-off and incubation literature, where ventures are seen as operating with ongoing commitment and continuous presence. Student creative collectives build capacity through a temporal logic that neither framework expects: discontinuous but recurring, sporadic but lasting over years.

Models of cohesion. Comparative analysis reveals four distinct cohesion models: complementarity through difference (ANIA): breadth across domains, vulnerable to individual withdrawal; professional efficiency (Triangle): consistent productivity without deep intimacy; deliberative intensity (Studio 43): depth through productive disagreement, dependent on co-presence; developmental asymmetry (JAMM): fast capability transfer via implicit leadership, with a risk of dependency. These are empirical descriptions, not prescriptive categories. These diverse models

support Cirella's idea that collective creativity is an emergent property rather than just a sum of individual talents, but they show that this emergence can take many structural forms [7]. For example, Studio 43 depends on what Hargadon and Bechky [8] call reflective reframing through productive conflict, while Triangle operates on highly efficient help-giving. Infrastructure supporting various formations should prepare for multiple cohesion logics instead of assuming only one developmental path.

5.2. FRAMEWORK REFINEMENT

Applying K1–K4 highlights necessary adjustments. **K1** benefited from characterological observation that surveys couldn't provide; future applications should explicitly include personality complementarity. **K2** needed expansion to incorporate crisis-driven learning as a pedagogical mechanism. **K3's** distinction between possessing infrastructure and activating it proved crucial: without this, fundamentally different conditions are assessed the same way. **K4** confirmed the usefulness of operationalizing latent capacity but showed it relies on extended observation: survey questions about futures produced evasive or abstract responses; only longitudinal engagement allowed for identifying gaps. In contexts where such long-term embedded observation is not possible, the framework could be adapted through repeated short-cycle observations, separate individual team-member questionnaires, and periodic artefact audits conducted at fixed milestones. Such an adaptation would reduce contextual depth, but would preserve the framework's comparative and diagnostic value.

5.3. IMPLICATIONS

For pedagogical practice, the findings suggest that infrastructure matters more than curriculum: dedicated space, access to equipment, proximity to mentors, and peer community generate learning that formal instruction does not. Mentorship operates as a sustained presence, not episodic instruction, and may be most critical where teams appear most self-sufficient. Organic team formation should be permitted, not engineered, and premature formalization should be avoided: ANIA's experience demonstrates that imposing organizational templates before collective readiness generates resistance rather than acceleration.

For the broader discussion on university spin-offs in creative disciplines [1], the study provides empirical evidence that spin-off logic can operate at the team level, not just as part of institutional infrastructure. Student creative collectives develop collaborative capacity, explore expanded professional trajectories, and prepare for formalization, all within educational settings and without depending on the commercial metrics that technology-transfer frameworks demand. The question this study cannot answer, whether this capacity persists when transitioning to market conditions, remains the most urgent focus for long-term follow-up research.

6. CONCLUSION

This paper developed and applied a four-domain evaluation framework (K1–K4) for assessing student creative collectives, a category of semi-professional formation that existing literature addresses only indirectly. The framework was applied to four teams operating within the APLeXMANIA infrastructure at the University of Banja Luka, using joint display integration of team self-assessment and long-term mentor observation, supplemented by artefact verification where available.

Three contributions emerge from the study. First, the paper clarifies the analytical relevance of student creative collectives as formations situated between traditional student groups and professional collectives: voluntarily sustained, institutionally supported, and professionally engaged, yet not fully formalized and still lacking adequate conceptual vocabulary. The teams' inconsistent self-categorization confirms that this is not an artificially imposed label, but a response to a genuine conceptual gap. Second, the K1–K4 framework demonstrates that evaluating such formations requires a multidimensional approach that no single disciplinary model can provide on its own. Group dynamics, learning beyond the curriculum, visibility and network activation, and future capacity function together as an interconnected developmental structure. The joint display method proved especially useful because it made the evidential basis of each claim transparent and showed that divergence between sources was often more analytically informative than convergence. In this context, gaps between self-perception and observed practice are not treated as measurement error, but as diagnostic indicators of developmental readiness. Third, the study contributes methodologically by operationalizing latent capacity as a team-level evaluative category. This addresses a temporal blind spot in existing frameworks, which tend to assess what teams currently

do but not what they are demonstrably becoming capable of. The finding that teams with the strongest accumulated experience may simultaneously show the weakest articulation of their own horizon has practical implications for how mentorship and infrastructural support are distributed within educational settings.

The study also has clear limitations. It examines four teams within a single institutional setting; it relies in part on an informed insider mentor-researcher position; and artefact availability remains uneven across domains and teams. These factors limit statistical generalization, but they do not reduce the value of the study as a bounded comparative multiple-case analysis. Rather, they define the scope within which the present findings should be interpreted.

The paper was intentionally designed as a team-level comparative multiple-case study grounded in developmental-evaluation logic, not as a statistically inferential population study. For that reason, its main limitation lies not in the absence of quantification itself, but in the current maturity of the evidence base, especially uneven artefact accumulation and the still-limited possibility of tracing post-study trajectories over time. In this sense, the study should be understood as establishing an evaluative framework appropriate to emergent, adaptive, and semi-formal educational formations.

The central question that remains open is whether collaborative capacity developed within protective educational infrastructure can survive the transition to market conditions. Whether teams that learn to collaborate under institutional support can sustain that practice under commercial pressures, professional isolation, and regulatory systems that do not recognize their organizational form remains unresolved. This question requires longitudinal follow-up extending beyond graduation.

What the present study demonstrates is that student creative collectives do develop genuine capacity: for collaboration, for learning through crisis, for navigating visibility and networks, and for building toward futures they cannot yet fully articulate. Future research should therefore extend the framework in three directions: longitudinal tracking beyond graduation, a richer artefact base produced over time, and finer-grained analysis of intra-team microclimates, adaptive role shifts, and internal asymmetries that remain outside the team-level focus of the present study.

LITERATURE

- [1] D. Stupar, D. Papaz, and D. Mance, "University spin-off initiatives in architectural education: APLE Lab as a platform for developing adaptable creative collectives," in *Proc. APLE Conference*, Sarajevo, Bosnia and Herzegovina, 2026.
- [2] P. Deamer, "Design pedagogy: The new architectural studio and its consequences," *Architecture MPS*, vol. 18, no. 1, p. 2, 2020. doi: 10.14324/111.444.amps.2020v18i1.002.
- [3] J. Till, *Architecture Depends*. Cambridge, MA, USA: MIT Press, 2009.
- [4] M. Barosio et al., *Architecture's Afterlife: The Multisector Impact of an Architecture Degree*. London, UK: Routledge, 2024. doi: 10.4324/9781003411574.
- [5] H. Harriss, D. Froud, and A. Jung, *Architecture's Afterlife: The Multi-Sector Impact of an Architectural Qualification*. London, UK: Erasmus+ Programme, 2022. [Online]. Available: <https://ec.europa.eu/programmes/erasmus-plus/projects/eplus-project-details/#project/2019-1-UK01-KA203-062062>
- [6] G. Grabher, "Temporary architectures of learning: Knowledge governance in project ecologies," *Organization Studies*, vol. 25, no. 9, pp. 1491–1514, 2004. doi: 10.1177/0170840604047996.
- [7] S. Cirella, "Managing collective creativity: Organizational variables to support creative teamwork," *European Management Review*, vol. 18, no. 4, pp. 404–417, 2021.
- [8] A. B. Hargadon and B. A. Bechky, "When collections of creatives become creative collectives," *Organization Science*, vol. 17, no. 4, pp. 484–500, 2006.
- [9] J. Lave and E. Wenger, *Situated Learning: Legitimate Peripheral Participation*. Cambridge, UK: Cambridge University Press, 1991.
- [10] E. Wenger, *Communities of Practice: Learning, Meaning, and Identity*. Cambridge, UK: Cambridge University Press, 1998.
- [11] E. Antonini, J. Gaspari, and C. Visconti, "Collaborative learning experiences in a changing environment: Innovative educational approaches in architecture," *Sustainability*, vol. 13, no. 16, Art. no. 8895, 2021. doi: 10.3390/su13168895.
- [12] M. Q. Patton, *Developmental Evaluation: Applying Complexity Concepts to Enhance Innovation and Use*. New York, NY, USA: Guilford Press, 2011.

7. APENDIX

QUESTIONNAIRE FOR APLExMANIA TEAMS

RESEARCH OVERVIEW

This questionnaire is part of a research study investigating how the infrastructure of the APLE Lab influences the development of student teams and creative practices. We examine APLExMANIA as a model for testing alternative pathways within the architectural profession.

APLExMANIA teams are conceptualized as creative collectives operating according to a spin-off logic rather than a startup logic. This implies that the primary focus is not on profit, rapid growth, or commercial success, but rather on the enhancement of collaborative capacities, knowledge transfer, and the exploration of diverse professional trajectories. While financial sustainability is essential for long-term viability, it does not serve as a metric of success at this stage of development.

We are interested in how teams are formed and evolved, the specific skills and competencies acquired through the Lab (distinguished from the formal curriculum), the construction of collaborative networks, the perception of the Lab as a community, and your vision for your professional future.

The questionnaire is to be completed collectively by the team through shared discussion. Responses are anonymous in the sense that no individual quotes will be published without your explicit consent. Candor is prioritized over curated or "favorable" responses, as the research seeks to capture authentic experiences, including any obstacles or frustrations encountered. There are no right or wrong answers.

Thank you for participating in this research.

GENERAL INFORMATION:

Team Name:

Full Name:

Year of Study:

Duration of Tenure at APLE Lab:

1. TEAM FORMATION AND INTEGRATION

1. What was the genesis of your team? Please delineate the formation process.

(Did you have prior collaborative experience during your studies? How was professional synergy established? When did this collaboration originate?)

2. How did your affiliation with APLE Lab begin?

(Were you invited by a faculty member? Did you secure a placement via a hackathon? Was it through self-initiative or other professional channels?)

3. Define the roles within the team. For each designation, please provide the name of the responsible member:

(Note: A single individual may occupy multiple roles)

ROLE	NAME OF MEMBER
Client Relations and Communication:	
Project Management and Coordination:	

3D Modeling and Visualization:	
Architectural Design:	
Graphic Design:	
Web Design and Digital Media:	
Event Management and Organization:	
Financial Management and Invoicing:	
Marketing and Social Media Management:	
Other:	

4. What is the team's decision-making protocol?

Collective deliberation (Consensus)

Lead-driven approach (Centralized leadership)

Project-specific leadership (Decentralized)

Formal protocol not yet established

Other:

2. LEARNING AND COMPETENCY DEVELOPMENT

5. Which specific skills or competencies have you acquired through the Lab that lie outside the scope of the standard academic curriculum?

(Please specify: e.g., teamwork, client relations, project management, product design, web design, event organization, etc.)

6. How do you reconcile traditional architectural practice (*design projects, interior design, conceptual development*) with experimental methodologies (*design, web development, visual communications, tutoring, social engagement*)?

7. List the most significant workshops, lectures, or events in which you participated via APLE Lab. (*Workshops, hackathons, seminars, APLE exhibitions, Inspirational Talks, Arhitekton, Aesc, Red Kiosk, etc.*) What were the key takeaways from these experiences?

3. PRACTICE AND PROJECTS

8. Enumerate the most significant projects or initiatives completed by your team.

9. In which domains or fields does your team operate?

Architectural projects (conceptual design, interior design, detailing)

Product design

3D model/maquette fabrication

Web design / digital platforms

Visual communications / graphic design

Socially engaged architecture / activism

Event and exhibition organization

Tutoring / education

Cross-sector collaborations (scenography, fine arts)

Other:

10. Which specific activities or formats do you employ in your work?

Architectural design

3D modeling / visualization

Digital tools (VR, AI, programming)

Graphic design

Product design

Web design

Workshops

Competitions

Exhibitions

Social engagement

Other:

4. VISIBILITY AND ORGANIZATIONAL INFRASTRUCTURE

11. Does your team possess any of the following?

Website (pending payment/subscription)

Instagram profile

Facebook page

Logo / visual identity

Portfolio (digital or print)

None of the above

12. If you lack any of the aforementioned, please specify the reasons or constraints.

(e.g., time constraints, lack of technical expertise, low priority, insufficient readiness...)

5. COLLABORATIONS AND ENGAGEMENTS

13. With whom have you collaborated as a team during your tenure in the Lab?

Architectural firms

Sole practitioners

Artists

Product designers

Graphic designers

Web developers / IT specialists

Architects working across disciplinary boundaries

Professors / mentors

Students from other teams

Other:

14. Describe your most significant collaboration. What outcomes or insights did it yield?

15. How do you secure projects (both remunerated and pro bono)?

(e.g., *client referrals via mentors, proactive outreach, recommendations, or through the Lab network?*)

16. If you undertake remunerated projects, what is your business model?

(*Who identifies clients, what is the billing structure, and how is remuneration distributed among team members?*) *Optional response.*

17. How would you characterize the current financial status of your team?

No revenue generated / voluntary basis

Occasional stipends / symbolic fees

Regular income, but insufficient for subsistence

Economically self-sustaining (comparable to firm employment)

Revenue exceeding standard firm employment levels

18. Does financial sustainability influence your team's future planning?

Yes, operations cannot continue without stable income

Partially, though other priorities take precedence (learning, experimentation)

No, financial factors are not decisive at this stage

6. THE LAB AS A COMMUNITY

19. What does APLE Lab signify for you: a workspace, a community, or another entity? *Please elaborate.*

20. What is the frequency of your presence in the Lab? How do you perceive daily interaction with other teams as support, inspiration, or competition?

21. How would you describe the atmosphere in the Lab, competitive or collaborative? Is there a culture of peer-to-peer learning and knowledge exchange between teams?

7. PROFESSIONAL FUTURE

22. How did you envision your professional trajectory PRIOR to forming a team and joining the Lab?

23. How do you perceive your professional future following your experience in the Lab? Have your perspectives shifted?

24. Which practices or fields are you exploring through the Lab that you had not previously considered?

25. Do you envision yourself in any of the following roles in the future?

Independent architectural practice (own firm)

Employment within an established architectural firm

Product design

Web design / digital platforms

Visual communications / graphic design

Multidisciplinary/cross-border practice

Socially engaged architecture

Academic / research-oriented work

Other:

26. Are you considering the formal institutionalization of your team (*e.g., establishing a company, sole proprietorship, LLC*) in the future? Please state the reasons for or against this transition.

8. PIONEERING WORK AND SUPPORT

27. How do you define your team? What is your organizational typology?

Start-up team

Spin-off team

Informal group

Creative collective

Emerging team

Student team

Other:

28. In the Republic of Srpska, there is a lack of start-up legislation and institutional support for student entrepreneurship. How do you experience operating under these conditions, as a challenge or as a form of experimental autonomy?

29. Do you find value in this pioneering approach, despite the absence of clear regulations and procedures?

30. What specific support or resources are required for your further development?

Legal framework / legislation (start-up laws, clear regulatory environment)

Financial support (grants, funds, scholarships)

Workshops on organizational management (entrepreneurship, project management, branding/marketing)

Workshops on digital tools (AI, software, web development)

Workshops on product design (ceramics, materials, textiles, traditional techniques)

Professional mentorship (architects, designers, entrepreneurs)

Technical equipment / software

Increased spatial capacity within the Lab

Assistance in establishing collaborations and partnerships

Legal / administrative support (contracts, registration, taxation)

Other:

31. Upon completion of your studies and your departure from the Lab, do you anticipate the continued existence of this team, or do you view it as a transient academic phase?

(In serious terms, how do you project the future of your team?)

Thank you for your time and your contribution to this research. Your responses assist us in understanding how the APLE Lab infrastructure facilitates the development of diverse creative practices.