East European University

Assessing the Effectiveness of Interactive Simulation-Based Learning vs. Traditional Methods on Postgraduate Students' Learning Outcomes from Directive to Student-centred Teaching Roles

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Dissertation submitted to the Faculty of Education Sciences of the East European University for the academic degree of Doctor of Education Science

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Tbilisi, 0159, Georgia

2026

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ACKNOWLEDGEMENTS

The author expresses his deepest gratitude to his academic supervisor, Professor Paul Gibbs, for his invaluable guidance, continuous support, and insightful feedback throughout the entire research process.

The author gratefully acknowledges the financial support of the East European University Internal Research Grant, which provided the funds for the acquisition of the Capstone 2.0 simulation platform and made the experimental phase of this study possible.

Sincere appreciation is extended to the leadership and administration of East European University for their organizational and administrative support. The author particularly thanks Professor Ketevan Aftarashvili, Dean of the faculty, Professor David Sikharulidze, Head of the Department of Educational Research and Development, and Professor Louise Dalingwater, PhD Program Coordinator and Full Professor at Sorbonne Université, for their guidance and encouragement throughout this study.

The author is sincerely grateful to the participating master's students for their enthusiasm, commitment, and active involvement, without which this research would not have been possible.

Special thanks are extended to Capsim Management Simulations, Inc. for generously providing full access to the Capstone 2.0 platform and for their comprehensive technical and methodological support during the experiment.

Tariel Elashvili

ABSTRACT

This dissertation investigates the effectiveness of various pedagogical approaches in simulation-based learning within higher education. The study was conducted in Georgia, where universities still predominantly rely on traditional lectures, despite this method's limited ability to develop students' practical skills. Using a quasi-experimental design, the research compared four distinct approaches: (1) traditional lectures, (2) directive mentoring (where the instructor provides direct instructions), (3) reflective mentoring (where the instructor prompts students' critical thinking through targeted questions), and (4) engagement mentoring (involving minimal instructions, competition, and gamification elements). The study addressed three research questions: (1) To what extent do the four pedagogical approaches differ in immediate post-intervention learning outcomes? (2) To what extent do the four pedagogical approaches differ in long-term knowledge retention (four-month follow-up)? (3) To what extent do the four pedagogical approaches differ in students' motivation, engagement, and satisfaction? Thirty-six master's students from the Faculty of Educational Research and Sciences at East European University participated in the study. They were randomly assigned to four groups (9 students per group) and engaged in an 8-week course on strategic management using the Capstone 2.0 business simulation. Outcomes were assessed three times: prior to the course, immediately after its completion, and 4 months later. Additionally, students were surveyed regarding their motivation, engagement, and satisfaction. Data were analyzed using Analysis of Variance (ANOVA), independent samples t-tests, and repeated measures analysis, with effect sizes calculated using Cohen's d and eta-squared (η^2). The study's primary findings highlight the superiority of simulation-based learning over traditional lectures. One simulation group (engagement mentoring) achieved a 82.8% improvement in learning outcomes, compared to just 30.8% in the lecture (traditional) group (Cohen's $d = 2.79$, $p < .001$)—a statistically significant difference. However, a 4-month follow-up evaluation of knowledge retention revealed varying effectiveness across methods: reflective mentoring achieved 68% retention (best retention), engagement mentoring achieved 64% (best motivation), directive mentoring achieved 59%, and traditional lecture achieved 49%. Regarding motivation, engagement, and satisfaction, engagement mentoring yielded the strongest results—students in this group demonstrated the highest levels of interest and involvement in the learning process ($\eta^2 = .71–.75$, indicating that the method accounts for 71–75% of the variance in these differences). These findings are grounded in several established theories: Kolb's experiential learning theory, Knowles' andragogy (adult learning), self-determination theory, and others. The key takeaway: reflective mentoring excels for long-term outcomes by encouraging students to deeply reflect on and analyze their experiences, while engagement mentoring is optimal for boosting motivation by granting autonomy, tracking progress, and fostering healthy competition. The study's contributions include theoretical integration of multiple theories demonstrating that different methods produce distinct results, with no single "ideal" approach existing—educators should select or combine methods based on specific objectives. Empirically, it provides the first measurement of long-term outcomes (4 months post-intervention) in the Georgian context, which is underrepresented in international research. Practically, it offers targeted recommendations: for instructors to use reflective mentoring for sustained retention and opt for engagement mentoring to maximize motivation; for universities to encourage simulation integration into curricula and invest in faculty training for these methods; and for the Ministry of Education to develop quality standards that prioritize active learning in master's programs. Study limitations include the small sample size (36 students), confinement to a single university and faculty, participation limited to Georgian students, and measurement of medium-term (rather than truly long-term) results. The overarching conclusion: "How we teach is no less important than what we teach." As master's students are adults with prior experiences, they benefit from practical, real-world-aligned exercises that promote deep comprehension through experiential learning and problem-solving—ultimately enabling far superior outcomes. This research contributes to positive social change by providing evidence-based pedagogical strategies for Georgian higher education reform, potentially improving educational quality for master's students and enhancing their readiness for professional practice in strategic management and related fields.

Keywords: pedagogy, mentoring, andragogy, simulation-based learning, gamification, strategic management, experiment.

აბსტრაქტი

ეს დისერტაცია იკვლევს სხვადასხვა პედაგოგიური მიდგომების ეფექტურობას სიმულაციაზე დაფუძნებულ სწავლებაში უმაღლეს განათლებაში. კვლევა ჩატარდა საქართველოში, სადაც უნივერსიტეტები ჯერ კიდევ ძირითადად ტრადიციულ ლექციებზე დაყრდნობით მუშაობენ, მიუხედავად იმისა, რომ ამ მეთოდს შეზღუდული შესაძლებლობა აქვს განავითაროს სტუდენტების პრაქტიკული უნარები. კვლევამ გამოიყენა კვაზი-ექსპერიმენტული დიზაინი და შეადარა ოთხი განსხვავებული მიდგომა: (1) ტრადიციული ლექციები, (2) დირექტიული მენტორინგი (სადაც ინსტრუქტორი პირდაპირ აძლევს მითითებებს), (3) რეფლექსიური მენტორინგი (სადაც ინსტრუქტორი სტუდენტების კრიტიკულ აზროვნებას უწყობს ხელს მიზანმიმართული კითხვებით) და (4) ჩართული მენტორინგი (რომელიც მოიცავს მინიმალურ მითითებებს, კონკურენციასა და გეიმიფიკაციის ელემენტებს). კვლევაში განხილულია სამი საკვლევი კითხვა: (1) რამდენად განსხვავდება ოთხი პედაგოგიური მიდგომა ჩარევისთანავე მიღებული სასწავლო შედეგებით? (2) რამდენად განსხვავდება ოთხი პედაგოგიური მიდგომა ცოდნის გრძელვადიანი შენარჩუნების მიხედვით (ოთხთვის შემდგომი)? (3) რამდენად განსხვავდება ოთხი პედაგოგიური მიდგომა სტუდენტების მოტივაციით, ჩართულობითა და კმაყოფილებით? კვლევაში მონაწილეობდა 36 მაგისტრანტი აღმოსავლეთ ევროპის უნივერსიტეტის განათლების კვლევებისა და მეცნიერებების ფაკულტეტიდან. ისინი შემთხვევით გადანაწილდნენ ოთხ ჯგუფად (თითოეულ ჯგუფში 9 სტუდენტი) და გაიარეს 8-კვირიანი კურსი სტრატეგიულ მენეჯმენტში Capstone 2.0 ბიზნეს-სიმულაციის გამოყენებით. შედეგები შეფასდა სამჯერ: კურსამდე, კურსის დასრულებისთანავე და 4 თვის შემდეგ. გარდა ამისა, სტუდენტები გამოიკითხნენ მოტივაციის, ჩართულობისა და კმაყოფილების შესახებ. მონაცემები დამუშავებული იყო დისპერსიული ანალიზით (ANOVA), დამოუკიდებელი ნიმუშების t-ტესტებითა და განმეორებითი ზომების ანალიზით, ეფექტის ზომების გამოთვლით Cohen’s d-ისა და eta-squared (η^2) გამოყენებით. კვლევის ძირითადი დასკვნები ხაზს უსვამს

სიმულაციაზე დაფუძნებული სწავლების უპირატესობას ტრადიციულ ლექციებთან შედარებით. ერთ-ერთმა სიმულაციურმა ჯგუფმა (ჩართული მენტორინგი) სასწავლო შედეგებში 82.8%-იანი გაუმჯობესება აჩვენა, ტრადიციული ლექციების ჯგუფის 30.8% -ის წინააღმდეგ (Cohen's d = 2.79, $p < .001$) — სტატისტიკურად მნიშვნელოვანი სხვაობა. თუმცა, ცოდნის შენარჩუნების ოთხთვიანმა შეფასებამ გამოავლინა მეთოდების განსხვავებული ეფექტურობა: რეფლექსიურმა მენტორინგმა უზრუნველყო 68%-იანი შენარჩუნება (საუკეთესო შედეგი), ჩართულმა მენტორინგმა — 64% (საუკეთესო მოტივაცია), დირექტიულმა მენტორინგმა — 59%, ხოლო ტრადიციულმა ლექციებმა — 49%. მოტივაციის, ჩართულობისა და კმაყოფილების მხრივ საუკეთესო შედეგები ჩართულმა მენტორინგმა აჩვენა — ამ ჯგუფის სტუდენტებმა გამოავლინეს ინტერესისა და ჩართულობის უმაღლესი დონე ($\eta^2 = .71–.75$, რაც იმას ნიშნავს, რომ მეთოდი ხსნის ამ სხვაობების 71–75%-ს). დასკვნები ეფუძნება რამდენიმე თეორიას: კოლბის გამოცდილებით სწავლის თეორიას, ნოულზის ანდრაგოგიას (ზრდასრულთა სწავლება), თვითგანსაზღვრის თეორიასა და სხვებს. მთავარი დასკვნა: რეფლექსიური მენტორინგი საუკეთესოა გრძელვადიანი შედეგებისთვის, რადგან ის სტუდენტებს უბიძგებს, ღრმად დაფიქრდნენ და გაანალიზონ თავიანთი გამოცდილება, ხოლო ჩართული მენტორინგი ოპტიმალურია მოტივაციის ასამაღლებლად, რადგან ანიჭებს ავტონომიას, აკონტროლებს პროგრესს და ქმნის ჯანსაღ კონკურენციას. კვლევის წვლილი მოიცავს თეორიების ინტეგრაციას, რომელიც აჩვენებს, რომ სხვადასხვა მეთოდი იძლევა განსხვავებულ შედეგებს და არ არსებობს ერთი „იდეალური" მიდგომა — პედაგოგებმა უნდა აირჩიონ ან შეუთავსონ მეთოდები კონკრეტული მიზნების მიხედვით. ემპირიულად, ეს არის პირველი გაზომვა გრძელვადიანი შედეგების (4 თვე ჩარევის შემდეგ) საქართველოს კონტექსტში, რომელიც საერთაშორისო კვლევებში ნაკლებადაა წარმოდგენილი. პრაქტიკულად კი, იგი იძლევა სამიზნე რეკომენდაციებს: ინსტრუქტორებისთვის — რეფლექსიური მენტორინგის გამოყენება შენარჩუნებისთვის და ჩართული მენტორინგის გამოყენება მოტივაციის მაქსიმიზაციისთვის; უნივერსიტეტებისთვის — სიმულაციების ინტეგრაცია სასწავლო გეგმებში და პედაგოგების ტრეინინგში ინვესტიცია; ხოლო განათლების

სამინისტროსთვის — აქტიურ სწავლებაზე ორიენტირებული ხარისხის სტანდარტების შემუშავება მაგისტრატურის პროგრამებში. კვლევის შეზღუდვებია: მცირე ნიმუში (36 სტუდენტი), ერთ უნივერსიტეტსა და ფაკულტეტზე შეზღუდვა, მხოლოდ ქართველი სტუდენტების მონაწილეობა და საშუალოვადიანი (და არა ნამდვილად გრძელვადიანი) შედეგების გაზომვა. „როგორ ვასწავლით, არანაკლებ მნიშვნელოვანია, ვიდრე რას ვასწავლით." მაგისტრანტები, როგორც ზრდასრული ადამიანები წინა გამოცდილებით, სარგებლობენ პრაქტიკული, რეალურ სამყაროსთან შესაბამისი დავალებებით, რომლებიც ხელს უწყობენ ღრმა გაგებას გამოცდილებით სწავლებისა და პრობლემების გადაჭრის გზით — რაც საბოლოოდ გაცილებით უკეთეს შედეგებს იძლევა. ეს კვლევა ხელს უწყობს დადებით სოციალურ ცვლილებას, რადგან საქართველოს უმაღლესი განათლების რეფორმისთვის იძლევა მტკიცებულებებზე დაფუძნებულ პედაგოგიურ სტრატეგიებს, რამაც შეიძლება გააუმჯობესოს განათლების ხარისხი მაგისტრანტებისთვის და გაზარდოს მათი მზადყოფნა პროფესიული პრაქტიკისთვის სტრატეგიული მენეჯმენტისა და მასთან დაკავშირებული სფეროებისთვის.

საკვანძო სიტყვები: პედაგოგიკა, მენტორინგი, ანდრაგოგია, სიმულაციაზე დაფუძნებული სწავლება, გეიმიფიკაცია, სტრატეგიული მენეჯმენტი, ექსპერიმენტი.

LIST OF TABLES:

LIST OF FIGURES:

LIST OF ABBREVIATIONS AND ACRONYMS

ANCOVA - Analysis of Covariance

ANOVA - Analysis of Variance

APA - American Psychological Association

CLT - Cognitive Load Theory

d - Cohen's d (effect size measure)

ELT - Experiential Learning Theory

e.g. - exempli gratia (for example)

et al. - et alia (and others)

etc. - et cetera (and so forth)

F - F-statistic (ANOVA test statistic)

H_0 - Null Hypothesis

H_1 - Alternative Hypothesis

i.e. - id est (that is)

IRB - Institutional Review Board

M - Mean (average)

MBA - Master of Business Administration

Mdn - Median

N - Total sample size

n - Subsample size

NCEQE - National Center for Educational Quality Enhancement (Georgia)

p - p-value (probability value)

PDF - Portable Document Format

RQ - Research Question

RQ1 - Research Question 1

RQ2 - Research Question 2

RQ3 - Research Question 3

SD - Standard Deviation

SDT - Self-Determination Theory

SE - Standard Error

SPSS - Statistical Package for the Social Sciences

t - t-statistic (t-test statistic)

TBD - To Be Determined

UK - United Kingdom

USA - United States of America

Table of Contents

1 CHAPTER 1: INTRODUCTION

1.1 Background of the Study

Contemporary higher education worldwide faces mounting pressure to transform pedagogical practices in response to rapidly evolving workforce demands and societal expectations. Traditional lecture-based instruction, which has dominated university classrooms for centuries, increasingly struggles to develop the complex competencies that twenty-first century professionals require (Freeman et al., 2014; Prince, 2004). The limitations of passive learning approaches have become particularly evident in professional fields like strategic management, where graduates must integrate theoretical frameworks, analyze ambiguous situations, make decisions under uncertainty, and adapt strategies as circumstances evolve—capabilities that develop through practice and reflection rather than through passive listening (Mintzberg & Gosling, 2002). This recognition has catalyzed a global shift toward student-centred pedagogies that emphasize active learning, authentic problem-solving, and experiential engagement (Kolb & Kolb, 2017; Morris, 2020).

Simulation-based learning has emerged as one of the most promising alternatives to traditional instruction, particularly in business education where students must develop practical decision-making capabilities alongside theoretical knowledge. Comprehensive meta-analytic evidence demonstrates that simulation-based approaches produce significantly superior learning outcomes compared to conventional lecture methods across diverse educational contexts. Chernikova et al. (2020) synthesized findings from 105 studies involving over 10,000 participants, finding that simulation-based learning in higher education produces medium to large positive effects on knowledge acquisition, skill development, and long-term retention. These advantages prove especially pronounced for complex cognitive skills that require integration of multiple knowledge domains—precisely the competencies that strategic management education aims to develop (Sitzmann, 2011). Business simulations create authentic decision-making environments where students experience consequences of strategic choices, receive immediate performance feedback, and iterate through multiple decision cycles that compress years of business evolution into weeks of intensive learning (Anderson & Lawton, 2009; Faria et al., 2009). Unlike case studies, which present static scenarios for analysis, or lectures, which emphasize abstract conceptualization without concrete practice, simulations enable students to progress through complete experiential learning cycles involving concrete experience, reflective observation, abstract conceptualization, and active experimentation (Kolb, 1984).

Among business simulation platforms, Capsim's Capstone 2.0 has achieved particular prominence as a comprehensive strategic management simulation adopted by universities across six continents. The platform enables students to manage virtual companies competing in dynamic market environments, making integrated decisions across functional areas including research and development, production, marketing, finance, and human resources (Capsim Management Simulations, 2023). Performance feedback comes through detailed financial statements, market research reports, and competitive benchmarking that mirror authentic business metrics. The simulation's widespread adoption reflects its pedagogical sophistication and technical reliability, characteristics that make it particularly suitable for rigorous comparative research examining how different instructional approaches influence learning outcomes. The platform's standardization enables researchers to isolate pedagogical variables while controlling for simulation complexity, technical functionality, and content coverage—methodological advantages that support valid comparison across teaching approaches.

Despite global recognition of simulation-based learning's effectiveness, Georgian higher education remains heavily reliant on traditional lecture-based instruction, particularly in master's-level business programs. While **the National Center for Educational Quality Enhancement (NCEQE)** has established standards emphasizing practical skill development, problem-based learning, and student-centred pedagogy, actual classroom practice often lags behind policy aspirations (Gibbs et al., 2023). The persistence of traditional methods reflects multiple factors: limited institutional resources for educational technology, faculty trained primarily in conventional pedagogical approaches, and established organizational cultures favoring familiar practices over pedagogical innovation (Gibbs et al., 2023). Practical constraints such as class size and resource availability further complicate the implementation of active-learning approaches in many institutional contexts. This gap between policy intentions and classroom reality carries particular consequences for master's students—adult learners who bring professional experience to the classroom yet often encounter pedagogical approaches treating them as passive recipients of knowledge rather than active constructors of professional expertise. Adult learning theory emphasizes that experienced professionals require pedagogical approaches honoring their autonomy, connecting to practical application, and enabling authentic practice of complex skills (Knowles et al., 2015; St. St. clair, 2024), yet Georgian business education frequently fails to provide such learning environments.

This contextual reality creates both challenge and opportunity for educational research. While simulation-based learning has demonstrated effectiveness across diverse international contexts, critical questions remain about optimal implementation approaches—particularly regarding how instructors should facilitate simulation experiences to maximize learning outcomes. The simulation literature describes various instructor roles using inconsistent terminology without systematic empirical comparison of their relative effectiveness (Molin, 2017; Scholtz & Hughes, 2021). Some research advocates minimal instructor intervention to preserve authentic experiential learning, while other studies emphasize structured guidance to support novice learners (Kirschner et al., 2006). Different theoretical frameworks generate competing predictions: experiential learning theory emphasizes complete learning cycles involving reflection and conceptualization; self-determination theory highlights autonomy support and competence feedback; cognitive load theory stresses appropriate scaffolding for novice learners. Yet empirical research systematically comparing theoretically grounded pedagogical approaches within simulation contexts remains scarce, particularly research examining long-term knowledge retention rather than only immediate outcomes, and research conducted in post-Soviet educational contexts where pedagogical traditions and resource constraints differ substantially from Western settings where most simulation research has occurred. This dissertation addresses these interconnected gaps by comparing four pedagogical approaches—traditional lecture, directive mentoring, reflective mentoring, and engagement mentoring—in strategic management education for Georgian master's students, examining both immediate learning gains and four-month knowledge retention to provide evidence-based guidance for educators and administrators pursuing pedagogical innovation.

1.2 *Statement of the Problem*

Despite widespread recognition that simulation-based learning produces superior outcomes compared to traditional lecture instruction, substantial questions remain about how to structure pedagogical support surrounding these experiential tools to optimize educational effectiveness. Meta-analytic evidence confirms that well-implemented simulations enhance learning across diverse contexts (Chernikova et al., 2020; Sitzmann, 2011), yet considerable heterogeneity across studies indicates that effectiveness varies substantially based on implementation characteristics. This variation points toward a critical insight that has emerged gradually across decades of simulation research: the technology enables experiential learning, but pedagogical approach substantially determines whether that potential translates into actual learning outcomes (Keskitalo, 2015; Scholtz & Hughes, 2021). The simulation literature describes various instructor roles—facilitator, guide, coach, mentor—using inconsistent terminology without systematic empirical comparison of effectiveness (Molin, 2017; Scholtz & Hughes, 2021). Some scholars advocate minimal intervention (Breunig, 2017), while others emphasize structured guidance (Kirschner et al., 2006), reflecting competing theoretical frameworks whose predictions remain inadequately tested in simulation contexts. Yet empirical research systematically comparing theoretically grounded pedagogical approaches within simulation contexts remains scarce, creating an evidence gap that limits educators' ability to make informed decisions about simulation implementation.

In the Georgian higher education context, these global knowledge gaps intersect with distinctive local challenges. Despite national quality standards developed by the National Center for Educational Quality Enhancement (NCEQE) emphasizing practical skill development, classroom practice remains predominantly lecture-based, particularly in master's programs (Gibbs et al., 2023). This pedagogical conservatism reflects multiple factors, including limited institutional resources, faculty trained primarily in traditional methods, and established organizational cultures favoring familiar practices over innovation (Gibbs et al., 2023). The persistence of traditional approaches carries particular consequences for adult learners in master's programs who bring professional experience yet encounter pedagogical methods treating them as passive recipients rather than active knowledge constructors. The gap between adult learning principles—which emphasize autonomy, connection to experience, and authentic practice

(Knowles et al., 2015; St. clair, 2024)—and actual classroom practices creates missed opportunities for developing the adaptive expertise that contemporary professional environments demand. Moreover, Georgian universities lack empirical evidence about pedagogical innovation effectiveness in local contexts, forcing administrators to base resource allocation decisions on international research that may not generalize across substantially different educational systems, cultural values, and institutional constraints.

This study addresses four interconnected knowledge gaps that collectively limit evidence-based decision-making about simulation implementation in strategic management education. First, existing research lacks systematic comparison of distinct pedagogical approaches within identical simulation environments. While individual studies examine specific facilitation methods, few rigorously compare multiple theoretically grounded approaches under controlled conditions enabling valid inference about relative effectiveness. This prevents educators from making evidence-based choices about how to facilitate simulations—whether to provide directive guidance, emphasize reflective processing, incorporate competitive elements, or employ other pedagogical strategies. Second, simulation research overwhelmingly examines immediate post-intervention outcomes while neglecting long-term knowledge retention. Most studies assess learning through post-tests conducted within days or weeks of intervention completion, yet educational effectiveness ultimately depends on knowledge durability extending beyond immediate assessment periods. Theoretical frameworks predict that approaches emphasizing deep processing and autonomous motivation should produce superior retention despite possibly slower initial acquisition (Bjork & Bjork, 2011), but empirical evidence testing these predictions in simulation contexts remains extremely limited. Third, research provides insufficient guidance about how different pedagogical approaches influence student motivation, engagement, and satisfaction beyond learning outcomes. Approaches that produce knowledge gains while leaving students frustrated or unmotivated create problems for program retention and students' willingness to apply learning professionally. Fourth, simulation research has occurred predominantly in North American and Western European contexts, with minimal evidence from post-Soviet educational systems where pedagogical traditions, resource constraints, and cultural values differ substantially from settings where existing research has been conducted.

The persistence of these knowledge gaps creates practical consequences extending beyond academic curiosity. Faculty members implementing simulations lack evidence-based guidance on facilitation strategies, forcing reliance on intuition or tradition rather than research evidence. Educational administrators struggle to allocate resources effectively when curriculum design decisions lack empirical foundation. Students may not receive optimal pedagogical support for learning from simulation experiences. Institutions pursuing quality improvement and international recognition cannot confidently invest in pedagogical innovations without understanding which implementation approaches justify resource commitments. This study directly addresses these interrelated problems through quasi-experimental research comparing traditional lecture-based instruction with three simulation-based mentoring approaches—directive mentoring, reflective mentoring, and engagement mentoring—examining immediate learning outcomes, long-term knowledge retention measured at four-month follow-up, and student perceptions of motivation and engagement across pedagogical conditions. By conducting this research with Georgian master's students in strategic management education, the study generates evidence for a geographic and institutional context currently underrepresented in international literature while addressing fundamental questions about pedagogical approach effectiveness with implications extending beyond the specific research setting.

1.3 Theoretical Framework

This research is grounded in an integrated theoretical framework combining three complementary theories that collectively explain why simulation-based learning proves particularly effective for adult learners and why different pedagogical approaches produce differential outcomes. The framework integrates Experiential Learning Theory (Kolb, 1984) as its primary foundation, Adult Learning Theory or Andragogy (Knowles, 1984) as contextual rationale for master's student populations, and Self-Determination Theory (Deci & Ryan, 2000) as explanation for motivational mechanisms underlying engagement and persistence. These theories collectively form a conceptual model that guides research design, structures data analysis, and provides interpretive lens for understanding empirical findings. Rather than treating these perspectives as competing explanations, the framework recognizes their complementary contributions: experiential learning theory describes the learning process, andragogy explains why this process proves particularly effective for adult learners, and self-determination theory illuminates motivational conditions that enable or constrain learning. This hierarchical integration enables coherent predictions about how different pedagogical approaches should influence both immediate learning outcomes and long-term knowledge retention.

Experiential Learning Theory, articulated most influentially by Kolb (1984) and refined through subsequent scholarship (Kolb & Kolb, 2017; Morris, 2020), proposes that meaningful learning occurs through transformation of experience via four sequential stages forming a complete learning cycle. The cycle begins with **concrete experience** where learners encounter phenomena directly through action or observation. This progresses to **reflective observation** during which learners step back from immediate experience to consider what occurred, examining patterns and seeking meaning. Reflection gives rise to **abstract conceptualization** as learners develop generalizable principles, theories, or frameworks that explain observed patterns and guide future action. The cycle completes with **active experimentation** where learners test newly formed concepts in novel situations, generating new concrete experiences that initiate subsequent cycles. According to this theory, learning is most effective when students progress through complete cycles rather than engaging only with isolated stages—a prediction with direct implications for pedagogical design (Kolb & Kolb, 2005, 2009). Business simulations naturally support complete experiential cycles: students make strategic decisions (concrete experience), observe performance outcomes (reflective observation), extract lessons about cause-effect relationships (abstract conceptualization), and test revised strategies in subsequent rounds (active experimentation). However, progression through these stages does not occur automatically merely through simulation access; rather, instructor facilitation substantially influences whether students engage superficially or progress through complete transformative cycles (Keskitalo, 2015; Ross, 2021). This theoretical lens predicts that pedagogical approaches explicitly scaffolding reflection and conceptualization should produce deeper learning than approaches emphasizing only concrete experience or active experimentation.

Adult Learning Theory, or Andragogy, recognizes that adult learners possess distinctive characteristics differentiating them from children and adolescents, characteristics with profound implications for pedagogical effectiveness (Knowles, 1984; Knowles et al., 2015). Contemporary andragogical scholarship identifies six core principles distinguishing adult learning (St. St. clair, 2024; Merriam & Baumgartner, 2020). First, adults exhibit strong need to **know**—they learn most effectively when understanding why learning matters and how it connects to their goals. Second, adult **self-concept** evolves from dependency toward autonomy; adults resent pedagogical approaches treating them as passive recipients and prefer directing their own learning. Third, adults bring substantial **prior experience** that serves as foundation for new learning and resource for peer learning, though this experience can also create resistance when new knowledge conflicts with established beliefs. Fourth, adults demonstrate **readiness to learn** oriented toward authentic challenges in their professional and personal lives rather than abstract academic knowledge. Fifth, adult **orientation to learning** is predominantly problem-centered rather than subject-centered—they want to solve real problems, not merely acquire information. Sixth, adult **motivation** tends toward internal drives such as professional development, personal satisfaction, and self-efficacy rather than external pressures like grades or parental expectations. These principles collectively suggest that master's students—adult learners pursuing advanced degrees while balancing professional responsibilities—require pedagogical approaches substantially different from those appropriate for traditional undergraduate populations. According to andragogical theory, traditional lecture-based instruction fundamentally contradicts adult learning needs by emphasizing instructor authority over learner autonomy, abstract knowledge over practical application, and external assessment over intrinsic motivation. Conversely, simulation-based approaches align naturally with andragogical principles by providing authentic problem-solving contexts, honoring learner experience through application of prior knowledge, and enabling autonomous decision-making within structured environments.

Self-Determination Theory provides complementary explanation for motivational mechanisms underlying learning engagement and persistence (Deci & Ryan, 2000; Ryan & Deci, 2017, 2020). The theory distinguishes between intrinsic motivation—engaging in activities for inherent satisfaction—and various forms of extrinsic motivation differing in quality and consequences for learning. Critically, the theory proposes that three basic psychological needs determine motivational quality: **autonomy** (experiencing choice and volition rather than external control), **competence** (feeling capable and effective rather than inadequate), and **relatedness** (experiencing meaningful connection with others rather than isolation). When learning environments satisfy these needs, students experience high intrinsic motivation, deep cognitive engagement, and persistent effort; when environments thwart these needs, students may comply minimally or disengage entirely (Vansteenkiste et al., 2020). According to this theory, pedagogical approaches differ substantially in how they support or undermine psychological needs. Traditional lecture and highly directive instruction may efficiently transmit information while simultaneously thwarting autonomy through external control and potentially undermining competence through passive positioning of learners. Reflective approaches that encourage questioning and autonomous problem-solving should better support autonomy, though they risk competence frustration for struggling students lacking adequate scaffolding. Engagement approaches incorporating competitive elements, visible performance metrics, and collaborative peer interaction should simultaneously satisfy all three needs: autonomy through student-controlled strategic decisions, competence through clear performance feedback and mastery experiences, and relatedness through shared competitive-collaborative context (Sailer et al., 2017; Sailer & Homner, 2020). This theoretical lens generates specific predictions about which pedagogical approaches should produce highest motivation and engagement, with implications extending beyond immediate affective outcomes to include deeper cognitive processing and superior long-term retention driven by intrinsically motivated learning.

These three theoretical perspectives integrate into a coherent conceptual model guiding empirical investigation (see Figure 1.1).

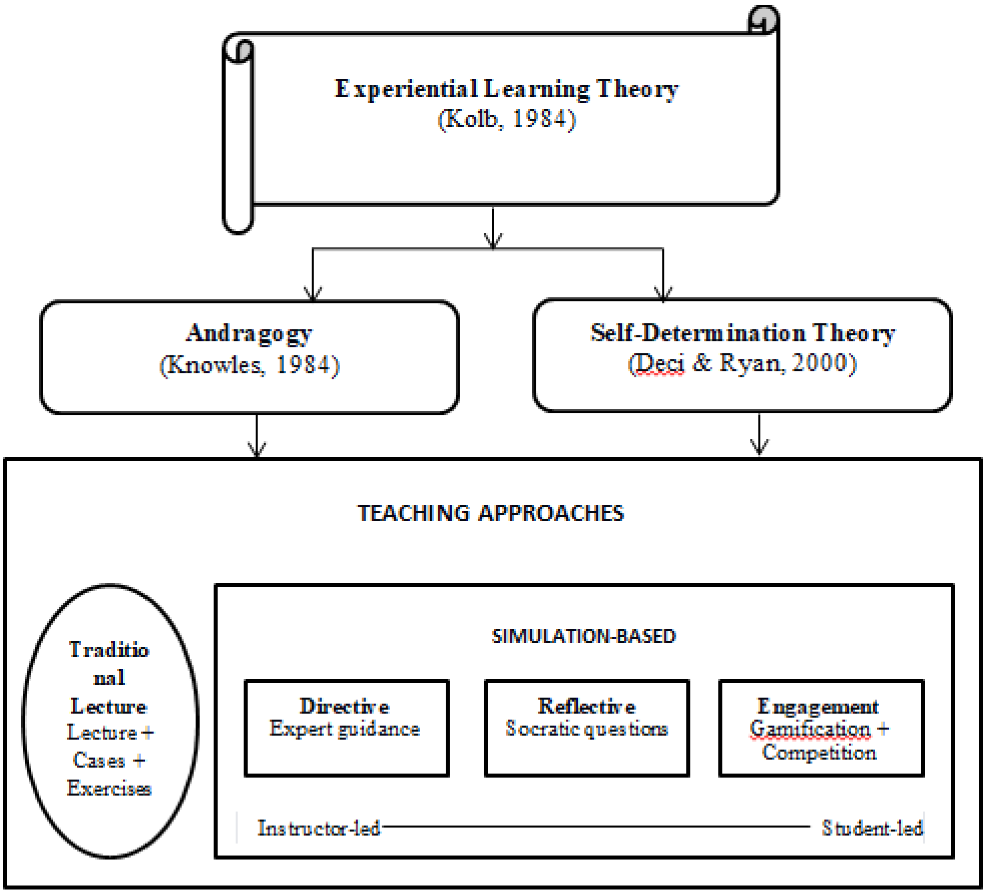


Figure 1.1 Integrated theoretical framework

Above figure 1.1 showing relationships among experiential learning theory, adult learning theory, and self-determination theory, and their application to four pedagogical approaches examined in this study.

The model positions Experiential Learning Theory as primary framework describing the learning process itself—how transformation of experience through complete cycles produces knowledge construction. Adult Learning Theory provides contextual rationale explaining why experiential approaches prove particularly effective for master's student populations whose characteristics align naturally with simulation-based learning. Self-Determination Theory illuminates motivational mechanisms through which pedagogical approaches either enable or constrain learning by satisfying or thwarting basic psychological needs. The four pedagogical approaches examined in this study—traditional lecture, directive mentoring, reflective mentoring, and engagement mentoring—represent distinct points along a continuum from instructor-centered to student-centred facilitation, with each approach differentially supporting experiential cycles, honoring andragogical principles, and satisfying psychological needs. This integrated framework enables coherent predictions about how different approaches should influence immediate learning outcomes, long-term knowledge retention, and motivational engagement, predictions that subsequent chapters test through systematic empirical investigation. The framework thus provides theoretical foundation for research design, analytical approach, and interpretation of findings, transforming what might otherwise appear as isolated empirical observations into theoretically grounded contributions to understanding of simulation-based learning in higher education.

1.4 *Research Objectives*

The overarching purpose of this research is to provide rigorous empirical evidence comparing pedagogical approaches in simulation-based strategic management education for master's students, examining both immediate learning outcomes and long-term knowledge retention to inform evidence-based curricular decisions in Georgian higher education. Given the substantial resource investment required for simulation adoption and the critical importance of pedagogical innovation for institutional competitiveness and graduate employability, systematic comparison of alternative implementation approaches is essential for enabling informed decision-making by faculty, administrators, and policymakers.

Primary Objective

To systematically compare the effectiveness of traditional lecture-based instruction with three distinct simulation-based mentoring approaches (directive mentoring, reflective mentoring, and engagement mentoring) on master's students' learning outcomes in strategic management using the Capstone 2.0 business simulation platform, examining immediate knowledge acquisition, four-month retention, and student perceptions to identify which pedagogical approach produces superior and more durable learning.

Specific Objectives

To achieve this primary objective, five interconnected specific objectives structure the empirical investigation:

Objective 1: To compare immediate post-intervention learning outcomes across the four pedagogical approaches (traditional lecture, directive mentoring, reflective mentoring, and engagement mentoring), identifying which approach yields highest knowledge acquisition during the eight-week instructional period.

Objective 2: To evaluate long-term knowledge retention by comparing four-month follow-up assessment scores across the four pedagogical approaches, determining which method produces most durable learning effects that resist forgetting beyond immediate instructional context.

Objective 3: To examine differences in students' motivation, engagement, and satisfaction across the four pedagogical approaches through quantitative questionnaire data, identifying which mentoring style generates highest levels of these affective outcomes.

Objective 4: To determine, based on the integrated theoretical framework combining Kolb's experiential learning theory, Knowles' andragogy, and Self-Determination Theory, which mentoring approach proves optimal for long-term retention and which approach proves optimal for motivation and engagement.

Objective 5: To develop evidence-based, practical recommendations for the integration of simulation-based learning into Georgian master's programs in strategic management, providing targeted guidance for faculty members, university administrators, and the Ministry of Education and Science of Georgia.

These objectives address the identified knowledge gaps through systematic comparison across pedagogical approaches, examination of both short-term and long-term outcomes, collection of quantitative performance and perception data, theoretical integration of empirical findings, and generation of practical guidance grounded in evidence rather than assumption. The objectives structure subsequent research design decisions detailed in Chapter 3, guide data collection and analysis procedures presented in Chapter 4, and provide evaluative criteria for assessing whether the investigation successfully addresses its intended purpose as discussed in Chapter 5.

1.5 *Research Questions*

This study addresses three research questions examining the effectiveness of different pedagogical approaches in simulation-based strategic management education for master's students. These questions guide systematic empirical investigation comparing traditional lecture-based instruction with three theoretically grounded simulation-based mentoring approaches.

RQ1: To what extent do the four pedagogical approaches differ in immediate post-intervention learning outcomes?

This quantitative comparative question examines whether pedagogical approach significantly influences knowledge acquisition during the eight-week instructional period. The question is answered through comparison of post-test performance across all four conditions (traditional lecture, directive mentoring, reflective mentoring, engagement mentoring), establishing the magnitude of between-group differences through effect size analysis. One-way analysis of variance enables systematic comparison while controlling for baseline knowledge differences, with post-hoc analyses identifying specific pairwise contrasts. This question addresses fundamental concerns about whether simulation adoption produces learning advantages justifying implementation investment, and whether different facilitation approaches within simulation contexts yield differential immediate outcomes.

RQ2: To what extent do the four pedagogical approaches differ in long-term knowledge retention (four-month follow-up)?

This temporal question examines learning durability by comparing follow-up assessment performance four months after intervention completion. The question addresses whether approaches producing highest immediate gains also produce most durable learning, or whether different pedagogical strategies optimize retention versus immediate acquisition. Analysis examines both conventional retention rates (percentage of knowledge maintained from peak post-test performance) and retained learning gains (knowledge maintained above baseline), recognizing that these metrics can produce different conclusions about retention effectiveness. This question proves particularly important for professional education where knowledge must persist long enough to apply in workplace contexts rather than merely enabling success on immediate examinations.

RQ3: To what extent do the four pedagogical approaches differ in students' motivation, engagement, and satisfaction?

This perceptual question examines affective and motivational outcomes beyond cognitive learning measures. The question explores which approaches students find most motivating and engaging, recognizing that pedagogical effectiveness encompasses both learning outcomes and student experience. Analysis utilizes validated questionnaire measures assessing intrinsic motivation, behavioral engagement, and overall satisfaction, examining between-group differences to identify which facilitation approaches best support motivational quality. Combined with cognitive learning data from RQ1 and RQ2, this question enables comprehensive evaluation across both achievement and affective dimensions, addressing concerns that approaches producing learning gains while undermining motivation create problematic trade-offs.

These three questions collectively address the central research problem: understanding not merely whether simulations work compared to traditional instruction, but how different pedagogical approaches within simulation contexts optimize distinct outcomes—immediate learning, long-term retention, and motivational engagement—thereby providing evidence-based guidance for curriculum design and instructional implementation.

1.6 *Research Hypotheses*

Based on the integrated theoretical framework combining Kolb's experiential learning theory, Knowles' andragogy, and Deci and Ryan's self-determination theory, three sets of hypotheses were formulated to guide empirical investigation. These hypotheses reflect theoretical predictions while remaining open to empirical refutation.

Hypothesis 1: Immediate Post-Intervention Learning Outcomes

H_{10}: There are no statistically significant differences in immediate post-test knowledge scores among the four pedagogical approaches.

H_{11}: There are statistically significant differences in immediate post-test knowledge scores among the four pedagogical approaches, with simulation-based approaches predicted to exceed traditional lecture based on experiential learning theory's emphasis on concrete experience and active experimentation, and with approaches satisfying psychological needs for autonomy, competence, and relatedness predicted to demonstrate advantages based on self-determination theory.

The alternative hypothesis predicts that pedagogical approaches enabling complete progression through Kolb's experiential learning cycle—particularly those incorporating immediate feedback, iterative decision-making, and reflection on consequences—should produce superior immediate learning compared to approaches emphasizing only abstract conceptualization without concrete practice. Additionally, approaches designed to satisfy basic psychological needs identified by self-determination theory should enhance intrinsic motivation and cognitive engagement, thereby improving learning outcomes.

Hypothesis 2: Long-Term Knowledge Retention

H_{20}: There are no statistically significant differences in four-month knowledge retention scores among the four pedagogical approaches.

H_{21}: There are statistically significant differences in four-month knowledge retention among the four pedagogical approaches, with approaches emphasizing reflective observation and autonomous knowledge construction predicted to demonstrate superior retention based on constructivist learning theory and the desirable difficulties framework.

The alternative hypothesis predicts that approaches requiring effortful processing, deep reflection, and autonomous problem-solving should produce more durable learning than approaches providing explicit answers or emphasizing rapid skill acquisition. This prediction derives from research demonstrating that learning conditions appearing efficient during acquisition often produce inferior long-term retention compared to conditions requiring generative cognitive processing (Bjork & Bjork, 2011). Pedagogical approaches scaffolding the reflective observation and abstract conceptualization stages of experiential learning should transform specific simulation experiences into generalizable knowledge structures that persist beyond immediate learning contexts.

Hypothesis 3: Student Motivation, Engagement, and Satisfaction

H_{30}: There are no statistically significant differences in students' motivation, engagement, and satisfaction across the four pedagogical approaches.

H_{31}: There are statistically significant differences in motivation, engagement, and satisfaction among pedagogical approaches, with approaches satisfying basic psychological needs for autonomy, competence, and relatedness predicted to demonstrate higher intrinsic motivation and engagement based on self-determination theory.

The alternative hypothesis predicts that pedagogical approaches providing autonomy support (through student-controlled decisions), competence support (through clear performance feedback and mastery experiences), and relatedness support (through collaborative peer interaction) should produce higher intrinsic motivation, behavioral engagement, and satisfaction compared to approaches that constrain autonomy, provide ambiguous competence feedback, or isolate students. Self-determination theory suggests that satisfaction of these needs determines not only immediate affective experience but also quality of cognitive engagement with learning tasks, creating connections between motivational and learning outcomes.

These hypotheses reflect theoretical predictions grounded in established learning frameworks rather than predetermined empirical outcomes. The formulation acknowledges that optimal pedagogical approaches may vary based on outcome priorities—immediate learning versus retention, cognitive achievement versus motivational engagement—rather than assuming universal superiority of any single approach. Empirical investigation will establish whether these theoretical predictions hold under actual implementation conditions in Georgian master's education, or whether alternative patterns emerge requiring theoretical refinement.

1.7 Ethical Considerations

This research adheres strictly to ethical principles governing human subjects research. The investigation received full approval from East European University's Institutional Review Board (Protocol #2024-EDU-015, approved September 1, 2023) prior to data collection commencement.

All participation was entirely voluntary, with students informed that decisions to participate would not influence course grades or academic standing. An independent third party facilitated informed consent to minimize coercion concerns. The instructor remained unaware of which students consented until after final grades were submitted.

Confidentiality was maintained through assignment of unique identification codes, with personally identifying information stored separately from research data. Data access was limited to the research team.

The study design ensured all participants received quality instruction. Upon study completion, students in the control condition were offered access to simulation-based learning materials.

Methodological Controls for Researcher Bias

Given that the principal investigator served as course instructor, several safeguards minimized potential bias:

1. **Baseline equivalence verification:** Random assignment was confirmed through pre-test ANOVA showing no significant baseline differences ($F(3,32) = 1.861$, $p = .156$).

2. **Faculty participant inclusion:** To maintain competitive balance, one faculty member participated as simulation competitor in each simulation-based group. In engagement mentoring, this was the principal investigator (inherent to the approach design); in directive and reflective mentoring, faculty colleagues participated. Faculty data were excluded from all analyses.

3. **Blinded assessment:** Assessments were scored by trained raters unaware of students' group assignments.

4. **Hypothesis neutrality:** Hypotheses were formulated to avoid predetermined outcomes, instead predicting patterns based on theoretical frameworks.

Detailed ethical procedures appear in Chapter 3 as integral components of research methodology.

1.8 Delimitations and Limitations

Delimitations:

The study examines strategic management education specifically rather than all business domains. It focuses on master's-level adult learners rather than undergraduate students. The investigation employs three specific simulation-based approaches representing theoretically meaningful points along the instructor-centred to student-centred continuum. The use of Capsim Capstone 2.0 provides standardization but may limit generalizability to other platforms. Holding the institution, instructor, and simulation platform constant across all four conditions was a deliberate methodological choice: because the central research question concerned the effect of pedagogical facilitation style, other contextual variables were fixed to preserve internal validity and permit confident attribution of outcome differences to facilitation approach rather than to extraneous sources of variation.

Limitations:

The sample size of 36 students (9 per group) provides adequate power for detecting large effects but limits capacity for investigating interactions. The single institutional context may limit generalizability. A single instructor implemented all approaches, potentially introducing bias, though this risk was mitigated through two safeguards. First, equivalent competitive conditions were maintained across all four groups by including a tenth simulation participant in every condition—an invited strategic management lecturer in the traditional lecture, directive mentoring, and reflective mentoring conditions, and the researcher in the engagement mentoring condition—so that the motivational effect of competing against an instructor-figure was held constant across conditions. Second, fidelity of implementation was independently verified through a manipulation check embedded in the student perception questionnaire, in which students' descriptions of instructor behavior consistently matched the facilitation style intended for their group (see Section 3.9). The four-month retention interval, while substantial improvement over immediate-only assessment, may not fully capture long-term patterns.

These limitations are addressed through multiple controls: standardized protocols, validated instruments, verified randomization, non-parametric robustness checks, and triangulation of quantitative and qualitative data.

1.9 Definitions of Key Terms

Business simulation: Computer-based platform (Capsim's Capstone 2.0) enabling students to manage virtual companies, make integrated strategic decisions, and experience consequences in risk-free environments.

Traditional lecture-based instruction: Conventional pedagogical approach wherein instructors present concepts through oral presentation supplemented by visual aids, with students primarily receiving information through listening and note-taking.

Directive mentoring: Structured facilitation approach characterized by explicit instructor guidance, step-by-step advice on simulation decisions, and directive debriefing emphasizing optimal strategies.

Reflective mentoring: Student-centred facilitation approach emphasizing guided discovery through Socratic questioning, minimal pre-decision guidance, and student-led strategy presentation.

Engagement mentoring: Collaborative facilitation approach incorporating gamification elements including public leaderboards, achievement badges, point systems, and instructor participation as simulation competitor.

Knowledge acquisition: Immediate gains in strategic management understanding, operationalized through comparison of pre-test and post-test scores.

Knowledge retention: Extent to which understanding persists over time, operationalized through four-month follow-up assessment.

2 CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

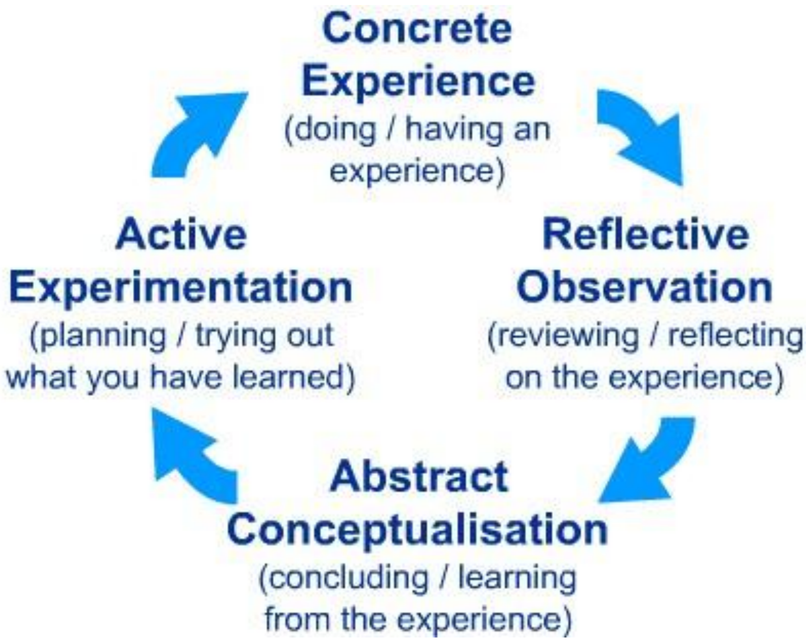
This chapter reviews and synthesizes the theoretical and empirical literature that provides the foundation for examining how different pedagogical approaches influence the effectiveness of simulation-based learning in strategic management education. The review is organized around three core components. First, the theoretical framework integrates three complementary perspectives—Experiential Learning Theory, Self-Determination Theory, and Adult Learning Theory—that collectively explain the mechanisms through which simulation-based learning may generate superior outcomes. Second, the historical evolution of simulation-based learning and the role of pedagogical facilitation are examined to contextualize current implementation challenges. Third, the specific Georgian higher education context is analyzed to highlight the unique cultural, institutional, and economic factors that may moderate the effectiveness of simulation approaches. By identifying both established knowledge and critical gaps in the literature, this chapter establishes the rationale for the current empirical investigation and positions the study's contributions within the broader field of higher education pedagogy and human capital development.

2.2 Theoretical Framework

2.2.1 Experiential Learning Theory: The Foundation for Learning Through Doing

The question of how experience becomes knowledge has preoccupied educational philosophers for centuries, though rarely has this transformation been articulated with the clarity and practical utility that David Kolb achieved through his synthesis of seemingly disparate intellectual traditions. Drawing from John Dewey's pragmatist philosophy, Kurt Lewin's pioneering work in social psychology, and Jean Piaget's developmental theory, Kolb (1984) proposed what would become one of the most influential frameworks in adult education and experiential learning.

Figure 2.1 Kolb's Experiential Learning Cycle



Note. The Experiential Learning Cycle illustrates the four-stage process through which experience transforms into knowledge. The cycle begins with Concrete Experience, progresses through Reflective Observation and Abstract Conceptualization, and completes with Active Experimentation, which generates new concrete experiences. Adapted from "Experiential Learning: Experience as the Source of Learning and Development," by D. A. Kolb, 1984, Prentice Hall.

What makes this theory particularly relevant to simulation-based learning is not merely its endorsement of experience as valuable, which would be trivially obvious, but rather its specification of how experience must be transformed through systematic processes to yield robust, transferable knowledge.

Kolb's central proposition—that "learning is the process whereby knowledge is created through the transformation of experience" (1984, p. 41)—deserves careful unpacking because it fundamentally challenges transmission models of instruction that have dominated higher education. The emphasis on transformation proves crucial. Mere exposure to experience, much like mere exposure to information, does not automatically produce learning. We have all encountered individuals who accumulate years of experience without developing genuine expertise, repeating the same mistakes because they never systematically reflected on their experiences or extracted generalizable principles from them. Similarly, students may complete business simulations without learning much if they fail to engage in the reflective and conceptual work necessary to transform simulation experiences into transferable strategic understanding.

The experiential learning cycle that Kolb articulated provides a framework for understanding this transformation process. It begins with concrete experience—direct, immediate, and often emotionally engaging involvement in a situation that provides the raw material for learning. In the context of business simulations like Capstone 2.0, concrete experience corresponds to the visceral reality of making consequential strategic decisions under uncertainty, experiencing market dynamics, and observing how competitor actions and environmental factors interact to produce outcomes that may surprise, delight, or disappoint. The simulation creates a compressed timeframe where strategic decisions made today produce observable consequences in the next round, providing rapid feedback that would take months or years to accumulate in actual business contexts.

However, Kolb recognized that concrete experience alone rarely produces deep learning, a point that contemporary research on "learning by doing" has reinforced (Morris, 2020). Without systematic reflection, experiences remain isolated events rather than becoming integrated into coherent understanding. This is where reflective observation enters the cycle, requiring learners to step back from the immediacy of action and examine what occurred from multiple perspectives. In simulation contexts, reflection might involve analyzing why certain strategic choices produced unexpected results, considering how competitor actions influenced outcomes, or identifying patterns across multiple decision rounds. The challenge, particularly in educational settings where time feels scarce and pressure to move forward remains constant, is creating space for genuine reflection rather than superficial review.

What distinguishes productive reflection from mere rumination is its connection to abstract conceptualization, the third stage in Kolb's cycle. This involves developing general principles, theories, or frameworks that explain observed patterns and provide guidance for future action. For students using business simulations, abstract conceptualization might involve connecting their experiences to strategic management frameworks like Porter's Five Forces, recognizing how resource allocation patterns influenced competitive advantage, or developing theories about optimal pricing strategies under different market conditions. The movement from concrete particulars to abstract generalizations represents the essence of learning—extracting lessons from specific situations that apply beyond those situations.

Yet Kolb's cycle does not end with conceptualization, which would risk producing armchair theorizing disconnected from practical application. Active experimentation completes the cycle by testing conceptual understanding through deliberate action in new situations. Students formulate hypotheses about effective strategies, implement those strategies in subsequent simulation rounds, and observe whether outcomes align with predictions. This transforms learners from passive recipients of knowledge into active investigators of their own learning. The recursive nature of the cycle—where active experimentation generates new concrete experiences that initiate the cycle anew—enables progressive refinement of both theoretical understanding and practical judgment across multiple iterations.

Figure 2.2 illustrates how the experiential learning cycle operates in simulation-based learning contexts, showing the progression from concrete experience through reflection and conceptualization to active experimentation.

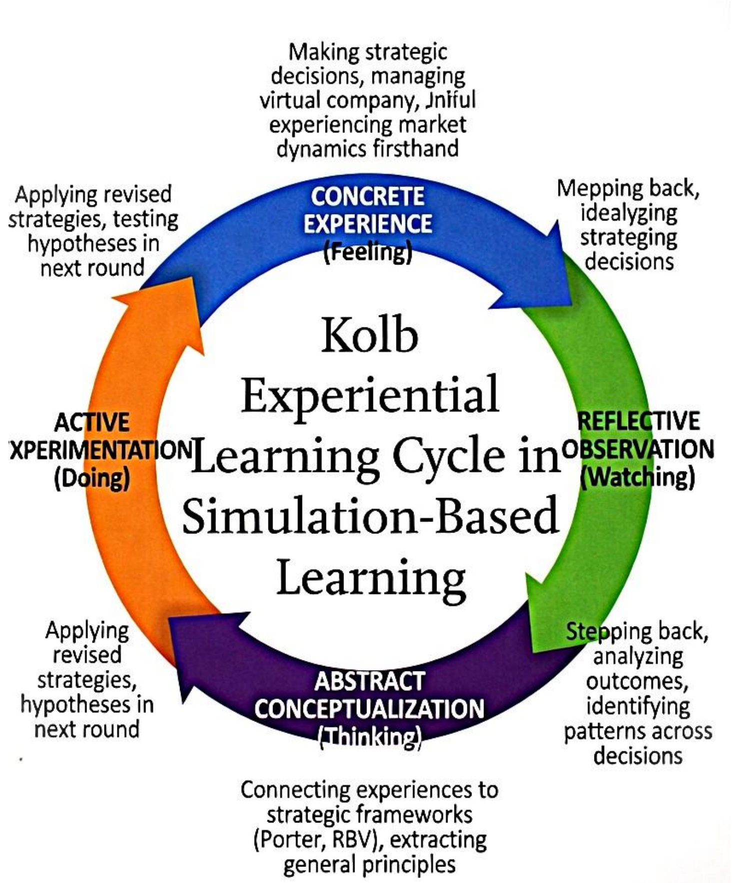


Figure 2.2 Kolb's Experiential Learning Cycle in Simulation-Based Learning

Recent scholarship applying Experiential Learning Theory to simulation contexts has emphasized that progression through all four cycle stages requires deliberate pedagogical support rather than occurring automatically when students engage with simulations (Kolb & Kolb, 2017; Ross, 2021). This observation carries profound implications for understanding instructor roles and pedagogical approaches. Simulations naturally provide opportunities for concrete experience and active experimentation—students will have experiences and make decisions regardless of instructor intervention. However, whether students engage in systematic reflective observation and meaningful abstract conceptualization depends critically on how instructors structure debriefing sessions, pose questions, and facilitate connections between simulation experiences and theoretical frameworks.

Research by Ross (2021) examining simulation-based learning in healthcare education found that identical simulation experiences produced dramatically different learning outcomes depending on debriefing quality. When debriefing emphasized systematic reflection using structured frameworks and explicit connection to theoretical principles, students demonstrated substantial knowledge gains and skill development. When debriefing consisted of informal discussion without structured reflection or theoretical connection, learning outcomes proved minimal despite students finding the simulation engaging. This finding underscores a central tension in simulation-based learning: student engagement and learning effectiveness, while related, do not necessarily coincide. Students may thoroughly enjoy simulation experiences while learning relatively little if pedagogical facilitation fails to support complete progression through the experiential learning cycle.

Kolb's original formulation also addressed individual differences in learning preferences, proposing that people develop stylistic tendencies toward particular cycle stages that influence how they approach learning situations. The four learning styles he identified—diverging, assimilating, converging, and accommodating—reflect different preferences for concrete experience versus abstract conceptualization and reflective observation versus active experimentation. However, this aspect of Experiential Learning Theory has proven more controversial than the cycle itself, with contemporary research questioning whether matching instruction to assessed learning styles actually improves outcomes (Pashler et al., 2008; Newton & Miah, 2017).

Systematic reviews examining learning style matching interventions have found minimal evidence that tailoring instruction to students' preferred learning styles enhances learning, leading some scholars to characterize learning styles as a persistent educational myth (Newton & Miah, 2017). These critiques do not invalidate the experiential learning cycle itself, which remains well-supported as a descriptive model of effective learning processes. Rather, they suggest caution about using learning style assessments to prescribe different instructional approaches for different students. For this research, the relevant implication is that pedagogical approaches should aim to support all students in progressing through complete learning cycles rather than matching instruction to assessed stylistic preferences.

The value of Experiential Learning Theory for understanding simulation-based learning extends beyond merely justifying simulations as pedagogically sound. It provides a framework for examining how different pedagogical approaches might facilitate or constrain learning cycle progression. Consider how the three mentoring approaches examined in this study might differentially support experiential learning cycles. Directive mentoring, emphasizing explicit guidance and structured support, might efficiently move students through cycles by providing frameworks for reflection and clear connections to theoretical concepts. However, excessive direction could potentially short-circuit the reflective and conceptual work students must do themselves to develop genuine understanding, creating dependency on instructor scaffolding that inhibits autonomous learning.

Reflective mentoring, emphasizing guided discovery through questioning and collaborative exploration, aligns closely with Experiential Learning Theory's emphasis on reflection and conceptualization as active, constructive processes. By posing questions rather than providing answers, reflective mentoring potentially promotes deeper engagement with reflective observation and abstract conceptualization stages. Yet this approach requires substantial time and may prove frustrating for students lacking conceptual foundations to interpret experiences productively. The risk is that without sufficient guidance, students might engage in unproductive reflection that reinforces misconceptions rather than challenging them.

Engagement mentoring, incorporating competitive elements and gamification, potentially enhances the concrete experience stage through emotional engagement and heightened attention. When students care deeply about performance, perhaps because of competitive dynamics or public recognition, simulation experiences may become more salient and memorable. Self-Determination Theory suggests that emotional engagement enhances memory consolidation (McGaugh, 2013), potentially making experiences more available for subsequent reflection. However, excessive focus on competitive performance might direct attention toward winning rather than learning, potentially undermining reflective observation if students fixate on outcomes rather than examining the decision processes that produced those outcomes.

These considerations illustrate how Experiential Learning Theory generates testable predictions about pedagogical approach effectiveness while also revealing the complexity of relationships between theory and practice. The theory provides essential foundation for understanding simulation-based learning while acknowledging that translating theoretical principles into effective pedagogy requires careful attention to implementation details, learner characteristics, and contextual factors. The empirical investigation described in subsequent chapters examines how these theoretical dynamics manifest in practice with Georgian master's students engaging with strategic management simulation, contributing evidence that may help refine both theory and pedagogical practice.

2.2.2 Self-Determination Theory: Understanding Motivation as the Engine of Learning

While Experiential Learning Theory illuminates the mechanisms through which experience transforms into knowledge, it leaves largely unaddressed a question that proves equally fundamental to understanding learning effectiveness: why do some students engage deeply and persistently with learning opportunities while others disengage or comply minimally with requirements? The difference between genuine engagement and hollow compliance manifests constantly in educational settings, yet understanding what drives this difference has proven remarkably complex. Traditional approaches to motivation often treated it as a quantitative variable—students possess more or less motivation—without recognizing that motivational quality matters as much as, if not more than, motivational quantity.

Edward Deci and Richard Ryan's Self-Determination Theory, developed and refined over more than four decades of empirical research, fundamentally reconceptualized how we understand human motivation (Deci & Ryan, 2000; Ryan & Deci, 2017). Rather than viewing motivation as a unitary construct varying only in amount, the theory distinguishes among qualitatively different types of motivation that produce distinct patterns of engagement, learning, and well-being. At one end of the continuum lies amotivation—the complete absence of intention to act, where individuals see no point in expending effort because they perceive no connection between actions and outcomes. Moving along the continuum, various forms of extrinsic motivation emerge, where behavior occurs not for inherent satisfaction but for separable consequences like rewards, approval, or avoidance of punishment.

What makes Self-Determination Theory particularly insightful is its recognition that extrinsic motivation itself varies in quality depending on the degree to which external regulations become internalized and integrated with one's sense of self. External regulation represents the most controlled form of extrinsic motivation, where behavior occurs solely to obtain rewards or avoid punishments with no internal endorsement. Introjected regulation involves taking in but not truly accepting external values, leading to behavior driven by internal pressures like guilt, anxiety, or contingent self-worth. Identified regulation occurs when individuals consciously value behavioral goals or regulations and accept them as personally important. Integrated regulation, the most autonomous form of extrinsic motivation, involves full assimilation of identifications with one's sense of self, though the behavior remains extrinsically motivated because it is valued as instrumental to other outcomes rather than inherently enjoyable.

Finally, intrinsic motivation represents engagement in activities for their inherent satisfaction and enjoyment, where the doing itself provides the reward. This distinction between intrinsic and extrinsic motivation might seem academic were it not for the substantial empirical evidence demonstrating their differential consequences (Ryan & Deci, 2020). Research across diverse domains consistently shows that intrinsic motivation and autonomous forms of extrinsic motivation predict superior learning, greater creativity, better psychological well-being, more sustained persistence, and enhanced performance on complex tasks compared to controlled forms of extrinsic motivation, even when overall effort remains comparable.

Figure 2.2 illustrates the motivation continuum, showing the progression from amotivation through various forms of extrinsic motivation to intrinsic motivation, with autonomy and quality increasing from left to right.

Table 2.1 Self-Determination Theory: The Motivation Continuum

Amotivation	External Regulation	Introjected	Identified	Integrated	Intrinsic
None	Extrinsic	Extrinsic	Extrinsic	Extrinsic	Intrinsic
Non-reg	External	Somewhat External	Somewhat Internal	Internal	Intrinsic
Impersonal	External	Somewhat External	Somewhat Internal	Internal	Internal
No intent	*For grades*	*Avoid guilt*	*Career value*	*Aligns with identity*	*Inherent interest*

Low Autonomy ---> High Autonomy

Note. The motivation continuum ranges from amotivation (absence of motivation) through various forms of extrinsic motivation differing in degree of autonomy, to intrinsic motivation (engagement for inherent satisfaction). Quality of motivation increases moving from left to right, with more autonomous forms predicting superior learning outcomes. Adapted from "Self-Determination Theory and the Facilitation of Intrinsic Motivation, Social Development, and Well-Being," by R. M. Ryan and E. L. Deci, 2000, American Psychologist, 55(1), p. 72.

For educators, these findings create both challenges and opportunities. The challenge lies in recognizing that simply motivating students proves insufficient if that motivation manifests as controlled compliance rather than genuine engagement. The opportunity emerges from understanding the conditions that foster higher quality motivation. This is where Self-Determination Theory's concept of basic psychological needs becomes crucial. The theory proposes that humans possess three innate psychological needs—autonomy, competence, and relatedness—whose satisfaction substantially determines motivational quality and psychological functioning (Deci & Ryan, 2000).

Autonomy represents the need to experience one's behavior as volitional and self-endorsed rather than controlled or coerced. This need manifests in preferences for choice, self-direction, and alignment between actions and deeply held values. Importantly, autonomy does not mean independence from others or rejection of external input. Rather, it involves experiencing one's behavior as emanating from oneself, whether that involves choosing to accept others' suggestions, internalizing values encountered socially, or making decisions independently. Students can experience homework as autonomy-supportive if they understand its value and choose to engage meaningfully, or as controlling if they complete it solely to avoid negative consequences without endorsing its purpose.

Competence involves experiencing oneself as effective in producing desired outcomes and exercising capabilities. People need not merely to succeed but to feel capable, to experience their successes as reflecting genuine mastery rather than luck or others' lowered standards. This need explains why participation trophies divorced from actual achievement often prove unsatisfying—they may temporarily placate but do not genuinely satisfy competence needs. In educational contexts, competence satisfaction requires optimal challenge that stretches students' capabilities without overwhelming them, clear feedback that enables understanding of progress and areas needing improvement, and opportunities for genuine mastery where accomplishment reflects actual skill development.

Relatedness encompasses feeling connected to others, caring for and being cared for, and experiencing sense of belongingness with individuals and communities. While perhaps seeming less central to learning than autonomy and competence, relatedness proves important particularly for sustained engagement and for students from cultural backgrounds emphasizing collectivist values. Feeling valued, respected, and genuinely cared for by instructors and peers creates psychological safety that enables risk-taking necessary for deep learning, while social isolation or marginalization undermines motivation and engagement.

The empirical evidence supporting these theoretical propositions has accumulated across remarkably diverse contexts. Research spanning four decades, multiple cultures, and varied domains demonstrates that social environments satisfying these three basic needs foster intrinsic motivation, autonomous forms of extrinsic motivation, psychological growth, and well-being, while contexts frustrating these needs undermine motivation and psychological health (Vansteenkiste et al., 2020). Cross-cultural research initially raised questions about whether these needs prove universal or reflect Western cultural biases toward individualism. However, studies across collectivist and individualist cultures consistently find that need satisfaction predicts positive outcomes regardless of cultural context, though the relative emphasis on different needs and the specific ways they manifest may vary culturally (Chen et al., 2015).

This body of evidence, however, warrants a more critical reading than a straightforward confirmation of universal need-satisfaction effects. Much of the supporting research relies on correlational, cross-sectional designs and self-report measures of need satisfaction and motivation, which cannot fully rule out reverse causation—for example, students who are already succeeding may retrospectively report higher autonomy and competence—or common-method variance inflating observed associations (Vansteenkiste et al., 2020). Moreover, experimental tests of Self-Determination Theory's predictions specifically within competitive, gamified, or simulation-based learning environments, as opposed to classroom instruction generally, remain comparatively scarce, leaving open the empirical question of whether need-satisfaction mechanisms operate identically when autonomy, competence, and relatedness are pursued through competitive rather than collaborative or individually paced structures. This gap directly motivates the present study's inclusion of engagement mentoring as an explicit experimental test of theoretically grounded gamification within a business simulation context.

Translating these theoretical insights into pedagogical practice has generated substantial research on autonomy-supportive teaching. Reeve and Cheon's (2021) extensive work demonstrates that instructor behavior substantially influences student need satisfaction and motivation. Autonomy-supportive teaching involves acknowledging students' perspectives and feelings, providing meaningful choices within appropriate structure, using non-controlling language that invites rather than pressures, explaining rationales for requirements rather than simply imposing them, and encouraging initiative and self-direction rather than compliance. These practices can coexist with clear expectations, structured assignments, and expert guidance—the key distinction lies not in whether structure exists but in how it is communicated and whether students experience choice in how they engage with that structure.

Competence support requires calibrating challenge appropriately to students' developing capabilities. Tasks too easy provide no competence satisfaction because they involve no genuine accomplishment, while tasks impossibly difficult create frustration rather than the satisfaction of stretching one's capabilities. This creates the challenge of differentiation—students in any classroom possess varied prior knowledge and skill levels, making it difficult to provide optimal challenge simultaneously to all students. Business simulations potentially address this challenge through their inherent complexity, which allows students to engage at different levels of sophistication, and through multiple rounds that enable progressive skill development. However, whether simulations actually support competence needs depends substantially on how instructors structure preparation, provide feedback, and facilitate reflection on performance.

Relatedness support in educational settings involves creating classroom environments characterized by mutual respect, genuine care, and collaborative rather than exclusively competitive dynamics (Ryan & Deci, 2020). This proves particularly relevant for simulation-based learning, where competitive elements risk creating social comparison anxieties that undermine psychological safety and relatedness satisfaction. Well-designed gamification can support all three psychological needs simultaneously—autonomy through meaningful choices, competence through optimal challenge and clear feedback, relatedness through collaborative team structures and social recognition. However, poorly designed gamification emphasizing controlling rewards, overwhelming difficulty, or hostile competition can frustrate all three needs.

The relevance to comparing different pedagogical approaches in simulation-based learning becomes apparent when considering how directive, reflective, and engagement mentoring might differentially support or frustrate these basic psychological needs. Highly directive approaches risk undermining autonomy if students experience guidance as pressuring them toward particular strategies rather than supporting their own decision-making. Even well-intentioned attempts to prevent mistakes may communicate lack of confidence in students' capabilities, frustrating both autonomy and competence needs. However, directive approaches might support competence through clear structure and feedback that helps students understand what constitutes effective performance.

Reflective approaches emphasizing guided discovery potentially support autonomy by positioning students as active knowledge constructors making genuine choices about strategy and interpretation. The Socratic questioning characteristic of reflective mentoring can support competence by scaffolding students' independent problem-solving rather than providing answers. However, if questioning becomes cryptic or if students lack sufficient foundational knowledge to benefit from minimal guidance, competence frustration may result. The social dynamics of reflective discussions might support or frustrate relatedness depending on whether they create inclusive dialogue or competitive displays of cleverness.

Engagement mentoring incorporating gamification represents an explicit attempt to satisfy all three psychological needs through competitive structures that provide clear feedback on competence, achievement systems recognizing diverse forms of excellence to support autonomy through multiple success pathways, and social recognition fostering relatedness. However, the risk remains that competitive elements may be experienced as controlling rather than informational, that public rankings may create anxiety frustrating competence needs for lower-performing students, and that competition may undermine relatedness through social comparison pressures. Whether gamification genuinely satisfies psychological needs or merely provides superficial rewards depends critically on implementation details and students' interpretations of competitive dynamics.

These theoretical considerations generate testable predictions about pedagogical effectiveness that the empirical investigation described in subsequent chapters examines. Self-Determination Theory predicts that approaches satisfying autonomy, competence, and relatedness needs should foster higher quality motivation, which in turn should predict deeper engagement, superior learning, and better long-term retention. However, the theory also acknowledges individual differences—some students may be more sensitive to autonomy support while others prioritize competence structure—and cultural variation in how these needs manifest. Examining these dynamics in the Georgian context with master's students provides evidence about how universal psychological needs operate in a specific cultural and educational setting.

2.2.3 Adult Learning Theory: Recognizing the Distinctive Nature of Master's Students

The theoretical frameworks discussed thus far—Experiential Learning Theory and Self-Determination Theory—articulate general principles of learning and motivation applicable across age groups and contexts. However, the recognition that adults learn differently than children, possessing distinctive characteristics that have implications for pedagogical design, has generated its own substantial tradition of theory and research. Malcolm Knowles' articulation of andragogy, defined as "the art and science of helping adults learn," represents the most influential formulation of this perspective, though not without generating considerable debate about whether adult learning truly constitutes a distinct phenomenon requiring separate theoretical treatment (Knowles, 1984; Knowles et al., 2015).

Knowles proposed several core assumptions distinguishing adult learners from children, each carrying implications for instructional design. First, adults' self-concept evolves from one of dependent personality toward increasingly self-directed human being. While children generally accept their dependent status and expect teachers to direct their learning fully, adults possess both the capability and desire for substantial autonomy in determining what, how, and when they learn. This shift does not occur uniformly across domains—an accomplished professional may feel quite dependent when learning a completely unfamiliar subject—but the general trend toward self-direction proves sufficiently consistent to warrant pedagogical attention.

Second, adults accumulate growing reservoirs of experience that constitute increasingly rich resources for learning. Children come to educational situations with relatively limited experience, making them dependent on others' experience communicated through lectures, readings, and assigned materials. Adults, conversely, bring substantial life and professional experience that can serve as foundations for new learning through connections, analogies, and integration with existing knowledge schemas. However, this accumulated experience carries a dual character—it may facilitate new learning by providing hooks for connection, or it may hinder learning when established beliefs and practices resist modification.

Third, adults' readiness to learn becomes oriented toward developmental tasks of social roles rather than biological development and academic progression. Children's readiness to learn aligns with maturation and curricular sequences; adults' readiness to learn relates to evolving responsibilities, changing life circumstances, and emerging challenges in professional and personal domains. This shift suggests that adult education proves most effective when clearly connected to authentic challenges adults face rather than organized primarily around academic discipline structure.

Fourth, time perspective shifts from postponed to immediate application of knowledge. Children can reasonably be asked to learn material they may not need for years because their primary social role involves preparation for future life. Adults, juggling multiple responsibilities and facing immediate challenges, prove understandably impatient with learning that lacks clear relevance to current concerns. This does not mean adults cannot engage with theoretical or abstract content, but rather that they need to understand how such content connects to authentic problems and purposes.

Fifth, motivation becomes increasingly internal rather than external. While children's motivation often derives from external pressures like parental expectations, grades, and teacher approval, adults tend to be motivated more by internal drives like desire for competence, professional advancement, personal fulfillment, and solving practical problems. This shift aligns substantially with Self-Determination Theory's distinction between controlled and autonomous motivation, suggesting theoretical convergence across frameworks.

These principles find particularly clear expression in the master's students who constitute this study's participants. These students bring professional experience in educational organizations, even if lacking specific business management expertise. They juggle work, family, and community responsibilities while pursuing graduate education, creating time pressures that make efficiency and relevance particularly important. They possess clear goals related to career advancement and organizational improvement rather than merely completing degree requirements. They likely possess self-concepts as capable professionals that may conflict with pedagogical approaches treating them as passive recipients requiring extensive direction.

However, applying andragogical principles proves more complex than simple prescription suggests. Knowles himself acknowledged that his principles describe a continuum rather than categorical distinctions, and that pedagogical choices should respond to specific learning situations rather than simply defaulting to assumptions about adults (Knowles et al., 2015). Some learning situations—highly technical skills, completely unfamiliar domains, contexts where student misconceptions might prove dangerous—may warrant more directive approaches even with adult learners. The key insight is not that adults always require or prefer complete self-direction, but rather that pedagogical approaches should respect adults' capability for autonomy while providing necessary structure and support.

Contemporary scholarship on adult learning has both refined and challenged aspects of Knowles' original formulation. Merriam and Baumgartner (2020), in their comprehensive review of adult learning research, note that the assumption of universal adult self-direction overlooks substantial individual variation and cultural differences in learning preferences and expectations. Some adults, particularly those whose educational experiences emphasized passive reception and teacher authority, may initially find self-directed learning uncomfortable or even anxiety-provoking. Cultural traditions emphasizing respect for elders and authority figures may create different expectations about appropriate teacher-student relationships than those implicit in Western andragogical principles.

This observation carries particular relevance for the Georgian educational context. Research on Georgian higher education has identified a persisting conceptual tension between Soviet-era pedagogical traditions — emphasizing teacher authority, structured knowledge transmission, and student deference — and post-Soviet efforts to introduce more dialogic, student-centred models of teaching and learning (Gibbs et al., 2023). Georgian universities have historically employed predominantly lecture-based instruction, with relatively limited use of active learning or student-centred pedagogies. Faculty members educated within this system, even if intellectually endorsing student-centred principles, may find implementing them unfamiliar and challenging; students likewise may initially expect and prefer teacher-directed instruction based on their prior educational socialization.

However, characterizing cultural differences requires care to avoid overgeneralization. Within any culture, substantial individual variation exists, with some Georgian students and educators embracing student-centred approaches while some Western educators maintain traditional practices. Moreover, cultures evolve—younger generations with exposure to international educational practices and changing workplace demands may develop different learning preferences than older generations. The master's students in this study, pursuing advanced degrees with career advancement goals and possessing professional experience, may exhibit more autonomous learning preferences than would undergraduate students or individuals without professional experience, regardless of cultural background.

Brookfield's (2024) work on critically reflective teaching adds another dimension to understanding adult learning. He emphasizes that effective adult education involves not merely respecting students' autonomy and experience but also challenging assumptions, questioning taken-for-granted beliefs, and examining the social and political dimensions of knowledge. Adults' accumulated experience, while constituting a learning resource, can also entrench problematic practices and beliefs if education merely validates existing perspectives without critical examination. This suggests that respecting adult learners does not mean uncritically accepting their current understandings but rather engaging them as intellectual equals capable of examining and revising their beliefs through evidence and reasoned argument.

The implications for pedagogical approach in simulation-based learning become apparent through considering how different approaches align with adult learning principles. Directive approaches emphasizing substantial structure and explicit guidance might seem to conflict with adult learners' preferences for autonomy and self-direction. However, if such guidance is provided in autonomy-supportive ways—explaining rationales, acknowledging student perspectives, inviting rather than pressuring—adults may appreciate clear structure that enables efficient learning without experiencing it as controlling. The distinction lies not in whether guidance exists but in how it is communicated and whether students experience it as supporting their autonomous goals or undermining their competence.

Reflective approaches emphasizing guided discovery through questioning align closely with adult learning principles in respecting learner autonomy, treating accumulated experience as learning resource, and positioning students as active knowledge constructors. The Socratic questioning characteristic of reflective mentoring communicates respect for students' thinking capabilities while scaffolding their independent analysis. However, if questioning becomes cryptic or if expected self-direction exceeds students' current capabilities given simulation complexity and limited strategic management background, frustration rather than empowerment may result.

Engagement mentoring incorporating competitive elements and gamification creates interesting tensions with adult learning theory. On one hand, competition and social recognition tap into adults' internal motivation for competence demonstration and achievement. Public leaderboards make performance transparent, providing clear feedback that adults often value. On the other hand, competitive dynamics might be experienced as external pressure rather than autonomy support, and public rankings might create anxiety rather than motivation for adults conscious of their professional identities and sensitive to public evaluation by peers.

These theoretical considerations do not prescribe particular pedagogical approaches as universally optimal for adult learners. Rather, they highlight factors likely to influence pedagogical effectiveness with master's students: the importance of respecting autonomy while providing structure, leveraging professional experience while remaining open to challenging existing beliefs, ensuring relevance to authentic professional challenges, and recognizing both universal adult learning characteristics and cultural variation in how they manifest. The empirical investigation described in subsequent chapters examines how these theoretical dynamics play out in practice, providing evidence that may help refine understanding of adult learning in the specific context of strategic management simulation with Georgian master's students.

The three theoretical frameworks examined in this section—Experiential Learning Theory, Self-Determination Theory, and Adult Learning Theory—converge in several important respects while also revealing tensions. All emphasize learner agency and active knowledge construction rather than passive reception. All recognize that effective pedagogy requires supporting learners' autonomous engagement rather than controlling through external pressures. All acknowledge that learning involves not merely cognitive processing but motivational, social, and developmental dimensions. Yet they also generate competing predictions. Cognitive Load Theory, not extensively discussed here but relevant to directive approaches, emphasizes structured guidance especially for novices. Experiential Learning Theory suggests reflection requires facilitation but is unclear about optimal facilitation approaches. Self-Determination Theory predicts autonomy support enhances motivation but acknowledges competence and relatedness needs that might sometimes conflict with maximal autonomy.

Understanding how these theoretical frameworks illuminate simulation-based learning effectiveness requires moving beyond theoretical exegesis to empirical investigation examining how pedagogical approaches function in practice. The subsequent sections review empirical evidence on simulation effectiveness generally and pedagogical approaches specifically, identifying both what is known and critical gaps motivating this research.

2.3 Evolution of Simulation-Based Learning in Higher Education

The sophisticated digital business simulations employed in contemporary higher education did not emerge fully formed but rather represent the culmination of seven decades of pedagogical innovation, technological advancement, and evolving understanding of how complex skills develop. Tracing this evolution illuminates not merely historical curiosity but fundamental questions about why simulation-based learning took the forms it did, what assumptions guided development, and why certain persistent challenges remain unresolved despite extensive refinement. Understanding this history helps contextualize current debates about optimal pedagogical approaches and reveals patterns that may inform future development.

The intellectual and practical roots of modern educational simulation extend surprisingly far back, though systematic development began in earnest during the mid-twentieth century. Military institutions pioneered the use of simulated environments for training purposes, recognizing that actual battlefield experience, while perhaps the ultimate teacher, came at costs measured in lives and resources that made it untenable as a primary training method (Smith, 2010). War games employed by military academies during the 19th and early 20th centuries involved officers moving representations of forces across maps, applying tactical principles to hypothetical scenarios, and experiencing consequences of strategic decisions without actual combat.

These early applications demonstrated several principles that would later prove central to educational simulation. First, simplified representations of complex realities could enable learning if the simplification preserved essential dynamics while eliminating extraneous detail. Second, experiencing consequences of decisions, even simulated consequences, provided feedback that abstract study alone could not deliver. Third, repeated practice with variations enabled development of adaptive expertise rather than merely memorized procedures. Fourth, debriefing and reflection proved essential for extracting transferable lessons from specific scenarios. These insights, developed through pragmatic military training needs rather than educational theory, anticipated many principles that learning scientists would later articulate more formally.

The translation of war gaming concepts to business education occurred in the late 1950s when pioneering educators recognized structural parallels between military strategic challenges and business competitive dynamics (Faria et al., 2009). Both domains involve decision-making under uncertainty, resource allocation constraints, competitive interaction, and trade-offs between long-term positioning and short-term performance. The American Management Association developed one of the first business games in 1956, titled "Top Management Decision Simulation," which required teams to manage simplified companies competing in a single industry. Carnegie Institute of Technology (now Carnegie Mellon University) introduced the Carnegie Tech Management Game in 1957, adding greater complexity and sophistication to the simulation model.

These early simulations were severely constrained by available technology. Paper-based versions required manual calculation of results, limiting complexity and creating delays between decision submission and outcome delivery that disrupted learning continuity. Computer-based simulations initially required mainframe access, making them available only to well-resourced institutions and creating logistical challenges around scheduling and data input. Despite these limitations, adoption expanded through the 1960s and 1970s as business schools sought methods for developing practical management capabilities alongside conceptual knowledge (Keys & Wolfe, 1990).

Several factors drove this expansion beyond mere technological possibility. Theoretical developments in management education increasingly emphasized experiential learning alongside conceptual knowledge, with scholars like Kolb (1984) providing explicit theoretical foundation for learning through experience. Growing criticism of traditional management education as excessively theoretical and disconnected from practice created demand for more applied methods that developed decision-making capabilities alongside analytical understanding (Mintzberg & Gosling, 2002). The case method, while valuable for developing analytical skills, provided less opportunity for experiencing consequences of decisions and learning through iterative refinement. Simulations offered something cases could not—the ability to make decisions, observe outcomes, adjust strategies, and experience the dynamic consequences of both effective and ineffective choices.

However, these early implementations faced substantial challenges that would shape subsequent development and that, arguably, remain incompletely resolved today (Gosen & Washbush, 2004). Simulation complexity often exceeded students' ability to comprehend decision implications, creating cognitive overload rather than productive challenge. The lack of established pedagogical frameworks meant that many instructors implemented simulations with insufficient orientation, minimal debriefing, and limited integration with course content. Processing delays—sometimes requiring days or weeks between decision submission and results due to batch processing on shared mainframe computers—disrupted the learning continuity that simulations theoretically enabled. Assessment practices often emphasized competitive performance rather than learning, potentially directing student attention toward winning rather than understanding.

Perhaps most fundamentally, the field lacked systematic research examining what made simulations effective or ineffective. Individual instructors accumulated practical wisdom through trial and error, and communities of practice like the Association for Business Simulation and Experiential Learning (ABSEL, founded 1974) enabled sharing of experiences and techniques. However, rigorous empirical research examining simulation effectiveness, comparing different implementations, or testing theoretical propositions about optimal design and facilitation remained limited. This meant that simulation adoption proceeded largely on faith that active engagement must produce better learning than passive listening, without the empirical evidence base that would later emerge.

The 1990s and 2000s witnessed concurrent technological transformation and pedagogical maturation that fundamentally altered simulation accessibility and sophistication. Several developments revolutionized what was possible (Lean et al., 2006). Personal computer proliferation eliminated mainframe dependence, enabling standalone simulation software installable on individual machines. Internet connectivity enabled web-based simulations offering anywhere/anytime access, automated processing, instant results, and possibilities for global competition. Graphical user interfaces replaced text-based interactions, making simulations more intuitive and engaging. Processing power enabled greater model complexity and realism without sacrificing responsiveness.

Major commercial platforms emerged during this period that would achieve widespread adoption across business schools globally. Capsim Management Simulations introduced Foundation and Capstone in 1998, emphasizing comprehensive business decision-making across functional areas with sophisticated competitive algorithms. Various Marketplace simulations from Innovative Learning Solutions offered similar scope with different emphases. Numerous specialized simulations focusing on specific domains—marketing, operations, entrepreneurship—provided alternatives or supplements to comprehensive general management simulations. This proliferation created both opportunities and challenges. Instructors gained access to sophisticated tools previously impossible, yet the variety made selection difficult and created coordination challenges when students encountered different platforms across courses.

Professional infrastructure supporting simulation-based learning matured substantially during this period. The ABSEL conference provided annual venues for scholarship, practice-sharing, and community development. Academic journals began publishing simulation research more regularly, though dedicated simulation journals remained scarce. Publishers and simulation vendors developed instructor resources, training programs, and support networks reducing barriers to adoption. However, this infrastructure remained predominantly North American and Western European, with limited reach to other regions including Eastern Europe and the Caucasus.

Research examining simulation effectiveness expanded dramatically, generating meta-analyses and systematic reviews synthesizing findings across hundreds of studies. Sitzmann's (2011) meta-analysis examining instructional effectiveness of computer-based simulation games found mean effect sizes of d = 0.48 for declarative knowledge and d = 0.54 for procedural knowledge compared to comparison conditions, representing moderate effects supporting simulation value. However, substantial heterogeneity across studies suggested that effectiveness varied considerably based on implementation quality and contextual factors.

Chernikova et al.'s (2020) more recent meta-analysis examining simulation-based learning in higher education analyzed 55 studies involving 6,476 participants, finding mean effect sizes of d = 0.47 for knowledge outcomes, d = 0.62 for skills, and d = 0.61 for attitudes. These moderate-to-large effects demonstrated that well-implemented simulations genuinely enhance learning. However, the meta-analysis also revealed that effectiveness varied substantially based on several factors. Studies emphasizing structured debriefing produced larger effects than those with minimal reflection. Simulations integrated meaningfully with course content outperformed add-on implementations lacking clear connection to curriculum. Adequate preparation and orientation proved important for preventing frustration and cognitive overload.

A critical limitation of both meta-analyses, however, is that neither systematically isolated pedagogical approach as a moderating variable distinct from simulation presence itself. Sitzmann (2011) and Chernikova et al. (2020) both aggregated across studies employing widely varying, and often unreported or inconsistently categorized, facilitation styles, meaning that the substantial heterogeneity both meta-analyses documented likely reflects differences in how simulations were facilitated as much as differences in simulation design or subject domain. Because primary studies rarely specified or systematically varied instructor facilitation approach, existing meta-analytic evidence cannot answer whether directive, reflective, or motivationally oriented facilitation drives the observed heterogeneity, or by how much. This is precisely the gap that comparative, within-simulation designs isolating facilitation style—such as the one employed in this dissertation—are positioned to address.

Importantly, research also began identifying conditions where simulations proved less effective or even counterproductive (Faisal et al., 2022). Excessively complex simulations overwhelmed novice learners, particularly when implemented without adequate scaffolding. Competitive structures sometimes directed attention toward winning rather than learning, creating stress that impeded rather than enhanced engagement. Technical problems—software bugs, connectivity issues, confusing interfaces—could undermine learning by consuming cognitive resources on troubleshooting rather than strategic thinking. Poor instructor preparation meant that many faculty implemented simulations without understanding how to facilitate effectively, sometimes treating them as self-teaching tools requiring minimal instructor involvement.

The contemporary era, roughly the past decade, has witnessed several notable trends. Artificial intelligence and machine learning capabilities enable adaptive difficulty, intelligent tutoring, and predictive analytics identifying struggling students before failure becomes apparent (Huang et al., 2023). Simulations increasingly emphasize ecosystem integration rather than functioning as standalone applications, with cloud-based architectures, mobile optimization, and learning management system connectivity reducing technical barriers. Gamification has emerged as a prominent trend, with platforms incorporating game elements—points, badges, leaderboards, achievement systems, narrative elements—to enhance engagement and motivation (Bach et al., 2023).

This last trend—gamification—has generated both enthusiasm and concern. Proponents argue that game elements tap into psychological mechanisms that games successfully exploit, enhancing engagement and motivation that translate to superior learning (Kapp, 2012). Research does demonstrate that well-designed gamification can enhance both motivation and learning outcomes when game elements genuinely satisfy psychological needs for autonomy, competence, and relatedness rather than merely providing superficial rewards (Sailer et al., 2017). However, critics caution that poorly designed gamification emphasizing external rewards may undermine intrinsic motivation, that competitive elements may advantage some students while disadvantaging others, and that focus on points and badges may direct attention toward gaming the system rather than genuine learning (Dichev & Dicheva, 2017).

Contemporary research has also increasingly recognized the critical importance of instructor pedagogical approach, though systematic frameworks distinguishing different approaches remain limited (Molin, 2017). Early simulation literature often treated instructor role as relatively straightforward—provide orientation, administer the simulation, facilitate debriefing—without recognizing that these generic prescriptions leave vast room for variation in implementation. Recent work has begun examining how different facilitation strategies influence learning, finding that pedagogical approach substantially affects outcomes yet optimal approaches remain contested and may vary based on learner characteristics, learning objectives, and simulation characteristics (Scholtz & Hughes, 2021).

Several insights emerge from this historical examination. First, technology enables but does not determine effectiveness. Each technological advance—from mainframes to personal computers to web-based platforms to AI-enhanced systems—expanded simulation capabilities, yet pedagogical skill remained the critical determinant of educational value. Second, the field has progressed from questions about whether simulations work to questions about how to optimize their implementation. Early research focused on demonstrating simulation value compared to traditional instruction; contemporary research examines which pedagogical approaches, implementation conditions, and learner characteristics optimize effectiveness. Third, fundamental questions regarding optimal instructor facilitation strategies remain incompletely answered despite decades of development and research.

The persistence of unresolved pedagogical questions might seem surprising given extensive development, but it reflects genuine complexity rather than mere neglect. Different theoretical frameworks generate competing predictions about optimal pedagogy. Cognitive Load Theory emphasizes structured guidance especially for novices, while constructivist perspectives emphasize productive struggle and discovery learning. Self-Determination Theory predicts autonomy support enhances motivation, while research on expertise development suggests novices benefit from worked examples and direct instruction. Adult learning theory emphasizes self-direction, while research on cognitive development suggests scaffolding remains important regardless of age. These theoretical tensions mirror practical challenges educators face when implementing simulations.

Moreover, optimal pedagogy likely varies based on contextual factors that systematic research has only begun to examine. Learner characteristics—prior knowledge, learning preferences, cultural background, motivational orientation—may moderate pedagogical effectiveness, with approaches proving optimal for some students ineffective or even counterproductive for others. Simulation characteristics—complexity, domain, competitive structure, feedback mechanisms—may interact with pedagogical approach to influence learning. Learning objectives—whether emphasizing knowledge acquisition, skill development, attitude change, or some combination—may require different facilitation approaches.

This historical and contemporary landscape creates the context for this research examining how different pedagogical approaches influence simulation-based learning effectiveness with Georgian master's students. The research contributes to addressing identified gaps by developing systematic frameworks distinguishing pedagogical approaches, implementing rigorous comparison within consistent context, examining both immediate learning and long-term retention, and providing evidence from underrepresented educational contexts. Understanding how the field arrived at current questions helps appreciate both the progress achieved and challenges remaining as simulation-based learning continues evolving to meet changing educational needs and leverage emerging technological capabilities.

2.4 Pedagogical Approaches in Simulation Learning: The Critical Role of Facilitation

The historical development of simulation-based learning traced in the previous section revealed a persistent pattern: technological advancement has consistently expanded simulation capabilities, yet pedagogical expertise remains the critical determinant of educational value. This observation directs attention to a fundamental question that has received surprisingly limited systematic research despite its obvious importance—how should instructors facilitate simulation-based learning to optimize educational outcomes? The question proves deceptively simple, as the answer involves navigating competing theoretical frameworks, addressing diverse learner needs, and balancing tensions between structure and autonomy, efficiency and depth, immediate performance and long-term retention.

Understanding optimal pedagogical approaches requires first examining the traditional methods that simulations aim to supplement or replace, both to appreciate why alternatives seemed necessary and to avoid dismissing traditional approaches' genuine strengths. Strategic management education in business schools, including Georgian institutions, has historically centered on lecture-based content delivery supplemented by case discussions, assigned readings, and conventional examinations (Pfeffer & Fong, 2002). The lecture—an instructor presenting organized content through oral explanation, typically with visual aids—remains the dominant pedagogical approach in universities worldwide despite longstanding critiques and periodic calls for reform.

The persistence of lecture-based instruction reflects several genuine advantages that help explain its durability even in the face of substantial criticism. Lectures enable efficient content coverage with large audiences, making them cost-effective compared to active learning methods requiring smaller class sizes or substantial instructor time per student. They provide clear organizational structures helping students navigate complex bodies of knowledge, with textbooks, lecture outlines, and systematic topic sequences creating scaffolding that supports learning, particularly for students lacking prior knowledge of the domain. Lectures excel at presenting theoretical frameworks systematically, explaining underlying logic, building from foundational concepts to advanced applications, and making implicit assumptions explicit through verbal elaboration that written texts may assume or compress.

Perhaps most pragmatically, traditional methods require only basic classroom facilities—room, seating, whiteboard or projector—making them implementable in resource-constrained environments lacking the technology infrastructure required for sophisticated simulations. For institutions facing budget limitations and limited faculty development resources, traditional approaches offer proven reliability. This consideration proves particularly relevant in the Georgian context, where research on the implementation of higher education quality standards points to persistent institutional and resource-related barriers to pedagogical innovation (Gibbs et al., 2023).

However, extensive research has documented significant limitations of lecture-based instruction, particularly for adult learners and competency development. The fundamental critique holds that traditional lectures position students as passive recipients rather than active constructors of knowledge. Decades of research consistently demonstrate that active learning methods—requiring students to think, discuss, solve problems, and apply concepts during class—produce superior learning outcomes compared to passive listening across diverse disciplines and educational levels (Prince, 2004). Freeman et al.'s (2014) influential meta-analysis examining 225 studies comparing active learning to traditional lecture found that students in traditional lecture courses were 1.5 times more likely to fail compared to students in courses using active learning approaches, with active learning producing average improvements of 6 percentage points on examinations.

These findings prove particularly robust across contexts. The advantage for active learning appeared in small classes and large classes, with experienced instructors and novice instructors, in sciences and humanities, with various assessment methods. This consistency suggests that the advantage for active learning reflects fundamental principles of how human cognition operates rather than merely pedagogical fashion or methodological artifacts. Information presented through lectures may enter working memory temporarily but often fails to undergo the deep processing required for durable encoding in long-term memory, particularly when students remain passive rather than actively manipulating, questioning, and applying concepts (Craik & Lockhart, 1972).

The limitations extend beyond cognitive outcomes to motivational and developmental domains. Traditional approaches often conflict with adult learning principles articulated through andragogy. Lectures prescribe content, pacing, and emphasis rather than allowing learner self-direction. Adult learners' professional experiences remain largely untapped as learning resources rather than integrated foundations for new understanding. Content organization follows academic discipline structure rather than authentic problems requiring integrated application. Knowledge is acquired in abstract form that may not transfer effectively to practical contexts where it must be applied without explicit cues about which concepts prove relevant.

Strategic management particularly requires not merely understanding frameworks but developing integrated decision-making capabilities, systems thinking, adaptive planning, and judgment under uncertainty—competencies that lectures alone inadequately develop (Mintzberg & Gosling, 2002). Understanding Porter's Five Forces intellectually differs fundamentally from recognizing when and how to apply the framework in analyzing ambiguous competitive situations, or from integrating competitive analysis with resource allocation decisions, operational capabilities, and temporal trade-offs that actual strategic decisions involve. This gap between declarative knowledge and procedural competence motivated the search for pedagogical alternatives that simulations represent.

The shift toward active learning approaches, including simulation-based methods, fundamentally transforms instructor roles and required competencies. In traditional instruction, the instructor functions primarily as content expert and information transmitter, with success depending on subject matter knowledge, organizational skills, and presentation ability. Active learning requires different capabilities that many faculty find more challenging to develop. Instructors must design authentic learning activities that engage students productively, facilitate learning processes rather than merely direct them, pose questions that provoke productive thinking rather than testing recall, manage group dynamics to ensure inclusive participation, create psychological safety enabling risk-taking necessary for learning, and balance structure with autonomy in ways that support rather than undermine student agency.

These facilitation competencies develop through practice and reflection rather than merely through subject matter expertise or pedagogical theory. The challenge becomes particularly acute for faculty whose own educational experiences emphasized traditional methods, who may lack models of effective facilitation to emulate, and who work in institutional cultures that privilege content coverage over learning process. Professional development supporting pedagogical skill development remains limited in many universities, with faculty expected to teach effectively without the systematic training that other professions require (Beaudoin, 2013).

Research on simulation-based learning has increasingly recognized that instructor pedagogical approach substantially influences learning outcomes, yet the literature describes instructor roles using inconsistent terminology and lacks systematic frameworks distinguishing different approaches (Molin, 2017). Instructors are variously described as "facilitators," "guides," "coaches," "moderators," "administrators," "motivators," and "playmakers," often without clear definitions distinguishing these roles or empirical evidence regarding their relative effectiveness. Some scholars advocate minimal instructor intervention, arguing that excessive guidance undermines the experiential learning that simulations aim to provide. Others emphasize the importance of structured support, particularly for novice learners navigating complex simulations.

This conceptual ambiguity creates practical challenges for educators implementing simulations. Without clear frameworks distinguishing pedagogical approaches or empirical evidence comparing their effectiveness, instructors must rely on intuition, tradition, or trial-and-error rather than evidence-based guidance. The resulting variation in implementation likely contributes to the heterogeneity observed in simulation effectiveness research—some studies finding substantial learning gains while others show minimal advantages over comparison conditions. If pedagogical approach substantially influences effectiveness but varies unsystematically across implementations, aggregate effectiveness estimates may mask important patterns.

Theoretical frameworks from educational psychology and learning sciences offer competing predictions about optimal pedagogical approaches, reflecting genuine tensions rather than merely confused thinking. Cognitive Load Theory emphasizes the limitations of working memory and suggests that novice learners benefit from explicit guidance reducing cognitive load and supporting schema construction (Sweller et al., 2011). When students lack relevant schemas for organizing information and guiding problem-solving, unguided exploration may impose excessive cognitive demands that impede rather than facilitate learning. From this perspective, directive approaches providing substantial structure and support should prove particularly effective for students lacking prior knowledge in a domain.

Constructivist learning theory, conversely, emphasizes that learners actively construct knowledge through engagement with experiences and social interaction rather than passively receiving information transmitted by instructors (Piaget, 1977). Meaningful learning requires learners to build connections between new information and existing knowledge, recognize patterns, test hypotheses, and develop understanding through active sense-making. Providing explicit answers may prevent the cognitive processing required for deep understanding, creating illusions of comprehension that prove fragile when students encounter novel applications. From constructivist perspectives, approaches emphasizing student autonomy and discovery may produce deeper, more transferable learning despite potentially slower immediate acquisition.

Self-Determination Theory predicts that autonomy-supportive approaches satisfying basic psychological needs should enhance intrinsic motivation and engagement, while controlling approaches thwarting autonomy needs undermine motivation even when they might efficiently transmit information (Deci & Ryan, 2000). Research on "desirable difficulties" demonstrates that learning conditions appearing efficient during acquisition often produce inferior long-term retention compared to conditions requiring effortful retrieval and generation, suggesting that pedagogical approaches optimizing immediate performance might not optimize durable learning (Bjork & Bjork, 2011).

These competing theoretical predictions remain inadequately tested through rigorous comparative research. Most simulation studies compare simulations generally to traditional instruction without systematically varying pedagogical approach within simulation implementations. The few studies examining instructor roles typically describe what instructors did without comparing different approaches using experimental or quasi-experimental designs enabling causal inference. This evidence gap leaves educators without empirical guidance regarding which pedagogical approaches optimize learning under what conditions.

This dissertation develops and empirically tests a systematic framework distinguishing three pedagogical approaches spanning the continuum from high instructor control to high student autonomy. The framework emerged from synthesis of multiple literature streams and recognition of persistent gaps in existing research. The term "mentoring" deliberately emphasizes supportive guidance rather than authoritarian control, while the modifiers "directive," "reflective," and "engagement" distinguish approaches along theoretically meaningful dimensions. Each approach represents not merely different techniques but fundamentally different theories of effective teaching grounded in distinct assumptions about learning processes, motivational dynamics, and optimal instructor roles.

Directive mentoring represents a structured, expert-guided approach characterized by high instructor activity and explicit guidance provision. Drawing primarily on Cognitive Load Theory and Social Cognitive Theory, this approach aims to reduce cognitive load and accelerate learning through systematic scaffolding. The instructor functions as expert guide providing explicit direction based on professional knowledge and simulation experience. Key implementation characteristics include pre-decision briefings where instructors provide explicit guidance regarding factors to consider, analytical frameworks to employ, and common mistakes to avoid; structured decision tools such as templates, checklists, and frameworks organizing analysis; real-time monitoring where instructors observe team decisions and intervene with questions or suggestions when concerning choices emerge; and directive debriefing emphasizing optimal approaches and identifying superior strategies.

The theoretical rationale rests on recognizing that complex domains impose substantial cognitive load on novice learners lacking schemas to guide problem-solving. Strategic management simulations require integrated analysis across multiple functional areas—marketing, operations, finance, research and development—while considering competitive dynamics, temporal trade-offs, and environmental uncertainties. This complexity potentially overwhelms working memory capacity, particularly for students whose professional experience lies in educational administration rather than business management. Directive mentoring reduces cognitive load through worked examples, explicit scaffolding, and structured support, potentially facilitating more efficient learning than approaches requiring extensive independent problem-solving.

Social Cognitive Theory complements this rationale by emphasizing that learning occurs through observation of expert models and subsequent replication of observed behaviors (Bandura, 1991). By providing explicit demonstration of effective approaches, directive mentoring enables students to develop competence more rapidly than discovery learning might allow. The approach predicts advantages in immediate knowledge acquisition and performance, efficient use of limited instructional time, reduced frustration and anxiety through clear guidance, and accessibility for students with limited prior knowledge or experience with self-directed learning.

However, directive approaches face theoretical critiques from multiple perspectives. Self-Determination Theory predicts that controlling instruction undermines intrinsic motivation by thwarting autonomy needs, potentially creating dependency rather than developing self-directed learning capabilities (Deci & Ryan, 2000). Research on desirable difficulties suggests that learning conditions appearing efficient during acquisition often produce inferior long-term retention compared to conditions requiring effortful retrieval and generation (Bjork & Bjork, 2011). Constructivist scholars argue that directive approaches may prevent the deep processing required for robust schema construction and transfer, creating knowledge that proves inert outside structured contexts (Hmelo-Silver, 2004).

Adult learning theory emphasizes that master's students require autonomy and self-direction, with directive approaches potentially conflicting with adult learners' self-concepts and preferences (Knowles et al., 2015). The expertise reversal effect demonstrates that continued high guidance becomes counterproductive as learners develop competence, potentially hindering rather than helping advanced students (Kalyuga et al., 2003). Cultural considerations add another dimension—directive approaches may align with traditional Georgian pedagogical culture but potentially reinforce patterns that educational reformers seek to change.

Reflective mentoring emphasizes guided discovery through questioning, collaborative exploration, and systematic reflection on experience. Drawing primarily on Constructivist Learning Theory and Reflective Practice Theory, this approach positions the instructor as facilitator helping students construct understanding rather than expert transmitting knowledge. The instructor functions as guide posing questions, facilitating discussion, and supporting student sense-making rather than providing explicit answers. Implementation characteristics include minimal pre-decision guidance where instructors provide brief orientation but avoid prescribing strategies; Socratic questioning during team preparation where instructors pose probing questions rather than providing answers; structured debriefing using frameworks that guide reflection systematically; student-led analysis where teams present decisions and rationales with instructor facilitating discussion; and emphasis on learning over performance, treating mistakes as opportunities rather than failures.

Constructivism provides the primary theoretical foundation, proposing that learners actively construct knowledge through interaction with their environment rather than passively receiving information. This perspective emphasizes several principles: knowledge construction is active rather than passive; integration with prior knowledge creates coherent schemas; social interaction supports cognitive development; and reflection connects experience to understanding. Reflective mentoring operationalizes these principles by positioning students as active knowledge constructors, using questions to activate prior knowledge, encouraging peer discussion and collaborative sense-making, and requiring explicit reflection connecting simulation experiences to theoretical frameworks.

Reflective Practice Theory, articulated by Donald Schön (1983), complements constructivism by emphasizing that professionals develop expertise through reflection on action—systematic examination of experiences to extract principles and insights applicable to future situations. Reflective mentoring explicitly develops reflective capabilities through structured questioning and debriefing. The approach predicts advantages including deeper learning through active construction, metacognitive development enabling self-directed learning, superior long-term retention despite potentially slower immediate acquisition, autonomy support enhancing intrinsic motivation, and strong alignment with adult learning principles.

However, reflective approaches face potential limitations. Cognitive Load Theory warns that unguided exploration may impose excessive load on novice learners, impeding rather than supporting learning (Kirschner et al., 2006). Discovery-based learning may require substantially more time than direct instruction to achieve similar knowledge acquisition, problematic given curriculum constraints. Reflective approaches may benefit students with strong self-regulation and prior knowledge while disadvantaging students needing more structure. Effective Socratic questioning requires substantial pedagogical skill that many instructors lack. Without careful facilitation, discussions may remain superficial rather than promoting genuine reflection.

Engagement mentoring represents an innovative approach integrating student-centred learning principles with strategic gamification elements to maximize motivation, engagement, and immersion. Drawing primarily on Self-Determination Theory and Flow Theory, this approach explicitly designs instruction to satisfy basic psychological needs while creating conditions supporting flow experiences. The instructor participates actively in competitive dynamics while maintaining facilitative role. Implementation characteristics include public leaderboards displaying team rankings on multiple performance dimensions;

achievement systems with badges recognizing diverse forms of excellence; comprehensive point systems tracking performance across dimensions; instructor participation as competitor within the simulation; interactive debriefing integrating competitive analysis with learning; and social recognition through public acknowledgment of accomplishments.

Self-Determination Theory provides the primary theoretical foundation. The approach explicitly aims to satisfy autonomy through students making strategic decisions freely with multiple pathways to success and meaningful choices throughout. Competence satisfaction occurs through clear performance feedback via leaderboards, achievement recognition across diverse dimensions, and progressive challenge as skills develop. Relatedness emerges through competitive structure creating social connection, team collaboration, and instructor participation signaling respect and engagement. Research demonstrates that instruction satisfying these needs fosters intrinsic motivation, autonomous forms of extrinsic motivation, and psychological well-being (Ryan & Deci, 2020).

Flow Theory complements Self-Determination Theory by describing optimal psychological states characterized by complete immersion, focused attention, and intrinsic enjoyment (Csikszentmihalyi, 1990). Engagement mentoring incorporates flow-supporting elements including clear goals through explicit objectives, immediate feedback via performance results, challenge-skill balance through competitive dynamics, and action-awareness merging through immersive engagement. The approach predicts substantial advantages: maximum motivation through satisfaction of all three psychological needs simultaneously; flow state induction supporting peak performance; emotional memory enhancement through competitive excitement creating salience that enhances consolidation; multiple success pathways enabling diverse students to excel; authentic competition with meaningful stakes creating genuine motivation; and social learning through observation of diverse strategies.

However, engagement mentoring faces potential critiques. Gamification research shows mixed results, with poorly designed implementations sometimes undermining rather than supporting learning (Dichev & Dicheva, 2017). The approach requires substantial instructor involvement, potentially limiting scalability. Misaligned focus represents a risk if students optimize for leaderboard position rather than learning. Some students may experience competition as stressful rather than motivating. Instructor participation as competitor creates potential issues regarding fairness and performance pressure. Critics argue that external rewards may undermine intrinsic interest by shifting motivation from genuine curiosity to reward acquisition.

These three approaches represent distinct pedagogical philosophies grounded in different theoretical traditions, yet all claim to enhance learning through simulation-based experiences. The empirical question becomes which approach, or perhaps which combination of elements drawn from different approaches, proves most effective under what conditions with what types of learners pursuing what learning objectives. Existing research provides limited guidance for several reasons. Most simulation research compares simulations generally to traditional instruction without systematically varying pedagogical approach within simulation conditions. The few studies examining instructor roles typically describe implementations without rigorous comparison. Long-term retention receives minimal attention, with most studies assessing only immediate outcomes. Moderating variables like learner characteristics, cultural context, and prior knowledge remain underexplored.

Table 2.1 provides a systematic comparison of the three pedagogical approaches across theoretical foundations, implementation characteristics, predicted advantages, and potential risks.

Table 2.2 Comparative Analysis of Three Mentoring Approaches in Simulation-Based Learning

Approach	Theoretical Foundation	Key Characteristics	Predicted Advantages	Potential Risks
Directive Mentoring	Cognitive Load Theory (Sweller, 2011); Social Cognitive Theory (Bandura, 1991)	Pre-decision briefings Structured templates Real-time monitoring	Efficient learning Reduced cognitive load Clear expectations Minimized	Autonomy undermined Dependency created Surface learning risk

		Directive debriefing	frustration	Expertise reversal effect
Reflective Mentoring	Constructivism (Piaget, 1977); ELT (Kolb, 1984); Reflective Practice (Schon, 1983)	Minimal guidance Socratic questioning Structured debriefing Student-led analysis Learning over performance	Deep learning Metacognitive development Long-term retention Autonomy support Adult learning aligned	Cognitive overload risk Time-intensive Requires instructor skill May disadvantage some Superficial discussions
Engagement Mentoring	Self-Determination Theory (Deci & Ryan, 2000); Flow Theory (Csikszentmihalyi, 1990)	Public leaderboards Achievement badges Point systems Instructor as competitor Social recognition	Maximum motivation Flow state induction Emotional memory Multiple success paths Social learning	Competition stress Misaligned focus Anxiety from rankings Cultural concerns Over-justification effects

Note. This table synthesizes theoretical foundations, implementation characteristics, predicted advantages, and potential risks for each pedagogical approach. The three approaches represent distinct pedagogical philosophies grounded in different learning theories, each with unique strengths and limitations that may manifest differently depending on learner characteristics, learning objectives, and contextual factors.

This comparison forms the basis for the empirical testing presented in Chapter 4.

This research addresses these gaps through rigorous quasi-experimental comparison of four conditions—traditional lecture, directive mentoring, reflective mentoring, engagement mentoring—using consistent simulation platform, participant population, and assessment instruments. The design enables examination of both immediate learning and four-month retention, providing evidence about durability of learning across approaches. Mixed methods data collection enables understanding not merely which approaches prove effective but why, examining student perceptions and experiences alongside learning outcomes. Situating the research in Georgian higher education context provides evidence about how pedagogical approaches function in underrepresented educational settings.

The findings will contribute to both theory and practice by testing competing theoretical predictions, refining understanding of conditions where different approaches prove effective, providing evidence-based guidance for educators implementing simulations, and informing faculty development supporting pedagogical innovation. The subsequent sections examine additional relevant literature on gamification principles and Georgian educational context before articulating specific research gaps this study addresses.

2.5 Gamification in Business Education: Motivation through Game Elements

The integration of game elements into educational contexts—commonly termed "gamification"—has emerged as one of the most prominent yet contentious trends in higher education over the past decade. The term itself, popularized around 2010, refers to applying game design elements and game principles in non-game contexts to enhance engagement, motivation, and desired behaviors (Kapp, 2012). In business education specifically, gamification manifests through various mechanisms: leaderboards displaying comparative performance, achievement badges recognizing accomplishments, point systems quantifying progress, levels indicating advancement, challenges structuring tasks, and narrative elements creating context and meaning.

The appeal of gamification rests on straightforward observations that many educators find compelling. Video games often produce remarkably high levels of engagement, sustained attention, voluntary effort, and intrinsic motivation—outcomes that educators aspire to cultivate in academic contexts but frequently struggle to achieve. Games can hold players' attention for hours, prompt repeated practice of complex skills despite initial failures, and motivate persistent effort in the face of frustration. Players voluntarily invest substantial time mastering game mechanics, developing strategies, and pursuing achievements that hold no instrumental value beyond the game itself. This observation prompted natural questions: if games successfully engage through specific design elements, might those elements be extracted and applied to educational contexts to produce similar motivational benefits?

However, the trajectory of gamification in education demonstrates that translating game engagement to educational contexts proves considerably more complex than early enthusiasm suggested. Research examining educational gamification has produced decidedly mixed results that complicate simple narratives about its effectiveness (Dichev & Dicheva, 2017; Sailer & Homner, 2020). Some studies find substantial positive effects on engagement, motivation, and learning outcomes. Others show minimal benefits or even negative effects where gamification undermines rather than enhances learning. Meta-analytic research attempting to synthesize across studies reveals this heterogeneity clearly.

Sailer and Homner's (2020) meta-analysis examining 38 studies found that gamification produced small positive effects on cognitive outcomes (Hedges' $g = 0.49$) and moderate effects on motivational outcomes ($g = 0.36$). These effect sizes, while statistically significant, fall well below what early advocates predicted and reveal substantial heterogeneity across studies. This variation proves informative because it suggests that effectiveness depends critically on implementation quality and theoretical grounding rather than merely on gamification presence or absence. Understanding what distinguishes effective from ineffective gamification becomes essential for educators considering whether and how to incorporate game elements into their teaching.

Nicholson's (2015) influential critique distinguishes between meaningful gamification that supports intrinsic motivation and psychological needs versus what he terms "pointsification"—superficially adding extrinsic rewards without addressing deeper motivational mechanisms. This distinction proves crucial for understanding both gamification's potential and its frequent failures. Meaningful gamification aligns with Self-Determination Theory principles by genuinely satisfying autonomy (through meaningful choices and self-direction), competence (through optimal challenge, clear feedback, and mastery opportunities), and relatedness (through social connection and collaborative elements). Pointsification, conversely, emphasizes extrinsic rewards—points, badges, rankings—without ensuring that these elements genuinely satisfy psychological needs or connect meaningfully to learning objectives.

Research supports this theoretical distinction empirically. Sailer et al.'s (2017) experimental study directly tested whether gamification elements designed explicitly to satisfy psychological needs produced different motivational effects than elements emphasizing external rewards. They found that autonomy-supportive choices, competence-relevant feedback, and relatedness-supporting social features enhanced intrinsic motivation and engagement, while elements emphasizing external rewards without need satisfaction produced no motivational benefits and in some cases undermined intrinsic interest. This finding aligns with decades of Self-Determination Theory research demonstrating that external rewards can undermine intrinsic motivation when they are experienced as controlling rather than informational (Deci & Ryan, 2000).

The implications for simulation-based learning prove particularly relevant given that business simulations inherently involve game-like characteristics. Unlike courses that add game elements to traditional instruction, business simulations already incorporate competition among teams, performance scoring, win/lose outcomes, strategic decision-making, and rule-bound interactions. The question becomes not whether to gamify but rather how to structure and facilitate the simulation experience to maximize motivational and learning benefits while avoiding potential pitfalls. This distinction matters because research examining business simulation games reveals both promises and perils of competitive, game-like structures in educational contexts.

Competitive structures where teams compete directly generally produce higher engagement than individual performance against absolute standards, creating social dynamics that enhance motivation through both competitive drive and collaborative team identity (Huang et al., 2023). However, competition also creates risks. Students who perceive themselves as unable to compete effectively may disengage rather than persist, particularly in public competition contexts where poor performance becomes visible to peers. Research in achievement goal theory distinguishes between mastery goals focused on learning and development versus performance goals focused on demonstrating ability relative to others, finding that performance goals sometimes undermine learning by creating anxiety, encouraging surface processing, and directing attention toward outcome rather than process (Mouratidis et al., 2018).

Multiple performance dimensions allowing diverse pathways to success appear more motivating than single metrics emphasizing narrow definitions of achievement (Velez et al., 2023). When simulations recognize only overall profitability or market share, students whose companies perform poorly on these dimensions may feel unsuccessful despite potentially excelling in other areas like research and development investment, ethical practices, or employee development. Achievement systems recognizing diverse accomplishments—innovation, consistency, improvement, strategic coherence, stakeholder balance—enable more students to experience competence satisfaction and find personal meaning in simulation engagement.

Social recognition through public acknowledgment of accomplishments satisfies relatedness needs and reinforces achievement motivation more effectively than private feedback alone (Sailer et al., 2017). However, public recognition must be managed carefully to avoid creating shame or embarrassment for students whose performance proves disappointing. Research on feedback provision suggests that public recognition works best when it celebrates multiple forms of excellence rather than merely identifying top performers, when it emphasizes improvement and effort alongside outcomes, and when it occurs within supportive social contexts where mistakes are framed as learning opportunities rather than personal failures.

Progressive challenge maintaining optimal difficulty as competence develops helps sustain engagement across time by preventing both boredom from tasks that are too easy and frustration from tasks that are impossibly difficult (Zou et al., 2021). Business simulations naturally incorporate progressive challenge through multiple decision rounds where strategic decisions build cumulatively, competitive dynamics evolve as all teams adapt strategies, and market conditions shift creating new challenges. However, whether this progressive challenge remains optimal depends on how instructors structure scenarios, adjust difficulty parameters, and support student skill development. Some simulations allow instructor adjustment of competitive intensity, market volatility, and decision complexity to maintain appropriate challenge as student competence develops.

Despite these design principles, gamification in business education faces persistent critiques and documented risks (Dichev & Dicheva, 2017; Toda et al., 2019). The most fundamental concern holds that adding game elements may direct student attention toward rewards and rankings rather than genuine learning. If students optimize strategies for leaderboard position rather than understanding, gamification undermines rather than supports educational objectives. This risk proves particularly acute when assessment emphasizes simulation performance directly rather than using simulation as context for developing knowledge and skills assessed separately. Research on over-justification effects demonstrates that adding extrinsic rewards to inherently interesting activities can undermine intrinsic motivation by shifting perceived locus of causality from internal interest to external incentive (Deci & Ryan, 2000).

Competition may advantage students comfortable with competitive environments while disadvantaging those who find competition stressful or culturally inappropriate. Cross-cultural research finds that while basic psychological needs for autonomy, competence, and relatedness appear universal, the relative emphasis on different needs and preferred ways of satisfying them vary across cultural contexts (Chen et al., 2015). Collectivist cultures may emphasize relatedness and group harmony more strongly than individualist cultures, potentially making competitive structures feel uncomfortable or inappropriate for students from collectivist backgrounds. The Georgian cultural context, with traditions emphasizing collective values and social relationships, raises questions about whether competitive gamification aligns with or conflicts with cultural preferences.

Public rankings may create anxiety and undermine autonomous motivation for some students, particularly those with performance anxiety or low self-efficacy who interpret rankings as judgments of personal worth rather than feedback on strategic decisions. Research on evaluation anxiety demonstrates that public performance contexts can impair cognitive performance for students experiencing anxiety, creating ironic effects where competitive pressure undermines the performance it aims to enhance (Patall et al., 2008). Over-justification effects suggest that adding extrinsic rewards to inherently interesting activities may undermine intrinsic motivation, though research indicates this occurs primarily when rewards are experienced as controlling rather than informational.

Equity concerns arise when gamification advantages students with greater familiarity with games, more time available for optional challenges, or characteristics enabling them to benefit from competitive dynamics. If gamification creates differential engagement based on gender, socioeconomic status, cultural background, or other characteristics unrelated to learning objectives, it may exacerbate rather than reduce educational inequities. Research examining gender differences in game engagement finds mixed results, with some studies showing male students more engaged by competitive game elements while female students prefer collaborative structures, though substantial individual variation within gender categories makes generalizations problematic.

Despite these legitimate concerns, thoughtfully implemented gamification grounded in psychological theory can enhance both motivation and learning in business education contexts. The key lies in ensuring that game elements genuinely satisfy psychological needs rather than merely providing superficial rewards, that multiple pathways to success exist enabling diverse students to excel, that competition occurs within supportive social contexts emphasizing growth over fixed ability, and that assessment evaluates learning rather than merely simulation performance (Sailer & Homner, 2020).

The engagement mentoring approach examined in this dissertation represents an attempt to apply gamification principles in theoretically grounded ways aligned with Self-Determination Theory. Public leaderboards provide clear competence feedback while recognizing multiple dimensions of performance to support autonomy through diverse success pathways. Achievement badges celebrate diverse accomplishments rather than merely identifying top performers. Instructor participation as competitor models genuine engagement and levels symbolic power differences that might otherwise inhibit relatedness. Interactive debriefing integrates competitive analysis with explicit focus on learning, ensuring that competition serves educational purposes rather than becoming an end in itself.

Whether this implementation produces predicted motivational and learning benefits compared to alternative pedagogical approaches represents a central empirical question. If engagement mentoring genuinely satisfies autonomy, competence, and relatedness needs while supporting experiential learning cycles and respecting adult learner characteristics, it should enhance both immediate learning and long-term retention relative to approaches satisfying fewer needs or satisfying them less effectively. However, if competitive elements prove stressful, if students optimize for rankings rather than learning, or if gamification conflicts with cultural preferences, engagement mentoring might prove less effective than reflective or directive approaches despite theoretical predictions.

The empirical investigation described in subsequent chapters examines these questions directly, providing evidence about gamification effectiveness in the specific context of strategic management simulation with Georgian master's students. Understanding how theoretically informed gamification functions in practice contributes to broader conversations about optimal pedagogical approaches in business education while also illuminating boundary conditions where gamification proves more or less effective.

2.6 The Georgian Higher Education Context: Situating Pedagogical Innovation

Understanding how pedagogical innovations like simulation-based learning function requires attention to the specific contexts in which implementation occurs. Educational practices do not transfer automatically across cultural and institutional boundaries; rather, their effectiveness depends partly on alignment with local traditions, available resources, institutional structures, and cultural values. This is illustrated by research on the implementation of teaching and learning standards in Georgian higher education, which highlights tensions between internationally endorsed pedagogical models and entrenched local practice (Gibbs et al., 2023). This section examines the Georgian higher education landscape, identifying factors relevant to simulation adoption and pedagogical approach effectiveness.

Georgia's higher education system has undergone substantial transformation since independence in 1991 and particularly following the Rose Revolution in 2003, which catalyzed reforms across public institutions. The system currently serves approximately 100,000 students across 60 higher education institutions, including 20 public universities, 14 teaching universities, and 26 private institutions (Ministry of Education and Science of Georgia, 2022). East European University, where this research occurs, represents one of the prominent private institutions offering programs in business, law, education, and health sciences. Founded in 2012, it has pursued pedagogical innovation more actively than many traditional public institutions, creating an environment potentially supportive of simulation-based learning approaches.

Georgian higher education faces several systemic challenges directly relevant to pedagogical innovation. Limited public funding constrains resources available for technology infrastructure, faculty development, and instructional innovation. While private institutions like East European University have greater resource flexibility, budget constraints remain real. Student-to-faculty ratios remain high compared to Western European standards, creating pressures for efficient instructional delivery that traditional lectures address more readily than resource-intensive active learning methods. Many institutions rely heavily on part-time faculty who lack time for pedagogical experimentation and development, limiting capacity for innovation even when interest exists.

Facilities often lack modern technology infrastructure required for sophisticated educational technologies, though this varies considerably across institutions. Internet connectivity has improved substantially but remains unreliable in some contexts. Computer labs exist but may have limited capacity or outdated equipment. These infrastructure limitations create genuine barriers to simulation adoption that wealthier educational systems may not fully appreciate. Even when institutions purchase simulation licenses, technical problems can undermine implementation effectiveness if systems prove unreliable or difficult to access.

Quality assurance mechanisms have strengthened substantially over the past decade, with the Georgian National Center for Educational Quality Enhancement implementing accreditation processes aligned with European standards (Georgian National Center for

Educational Quality Enhancement, 2022). Institutions must demonstrate learning outcomes, quality assurance processes, and continuous improvement to maintain accreditation. These requirements create both pressures and opportunities for pedagogical innovation. Pressures emerge from requirements to demonstrate effectiveness using evidence rather than tradition. Opportunities arise from institutional recognition that quality enhancement requires pedagogical evolution beyond traditional approaches.

However, quality remains variable across institutions. Leading universities in Tbilisi achieve standards comparable to regional competitors, while smaller regional institutions often struggle with limited resources and faculty capacity. International rankings place no Georgian universities among global top 500, though several achieve regional recognition. This variability means that research findings from elite institutions may not generalize to the broader higher education landscape, underscoring the importance of understanding specific institutional contexts where pedagogical innovations occur.

Georgian educational culture has historically emphasized traditional, teacher-centered pedagogical approaches reflecting Soviet-era educational philosophy. Lectures remain the dominant instructional method, with limited use of active learning, experiential approaches, or educational technology beyond basic presentation software. Faculty authority and student deference represent cultural norms that shape classroom dynamics. This pedagogical conservatism reflects multiple factors: limited faculty exposure to alternative methods, lack of professional development opportunities supporting skill development in active learning facilitation, resource constraints limiting experimentation, and cultural traditions emphasizing respect for teachers and hierarchical knowledge relationships.

However, characterizing Georgian pedagogical culture requires avoiding overgeneralization. This traditional orientation is gradually changing as institutions seek to enhance quality and competitiveness in increasingly international higher education markets. Younger faculty members, many with international training from European or American universities, bring exposure to contemporary pedagogical approaches and enthusiasm for innovation. Student expectations are evolving as increased access to global educational resources through online platforms creates awareness of alternative methods. Institutional leaders increasingly recognize that traditional approaches inadequately prepare graduates for dynamic employment markets requiring adaptability, critical thinking, and complex problem-solving alongside disciplinary knowledge.

European integration goals create external pressures for pedagogical modernization. Georgia's aspirations toward European Union membership and participation in European Higher Education Area initiatives require demonstrating alignment with European educational standards, which increasingly emphasize student-centred learning, competency development, and quality assurance. These external pressures complement internal motivations for improvement, creating momentum for pedagogical change that would not emerge from internal factors alone.

Research on the implementation of quality-enhancement standards in Georgian higher education identifies institutional barriers particularly relevant to simulation-based learning, including resistance to unfamiliar teaching approaches and resource constraints (Gibbs et al., 2023). Where simulations depend on consistent internet connectivity or specific software configurations, technology infrastructure limitations may further constrain platform access and reliability. Faculty lack training in simulation pedagogy, with professional development opportunities limited. The gap between faculty members' own educational experiences and the pedagogical approaches they are asked to implement creates challenges. Having been educated through traditional methods themselves, faculty may lack experiential knowledge of effective active learning facilitation, making implementation feel risky and uncertain.

Resource constraints make simulation licensing costs prohibitive for some institutions. While simulation costs have decreased with web-based platforms, they remain significant for budget-constrained institutions. Hidden costs beyond licensing fees—faculty time for learning platform operation, technology support requirements, potential need for additional computer lab capacity—may not be fully appreciated when adoption decisions are made. Cultural comfort with traditional methods creates resistance to pedagogical change among both faculty and students. Faculty may worry that active learning appears less rigorous or question whether they possess adequate pedagogical skill. Students initially may resist unfamiliar approaches, particularly when assessment methods differ from what they have experienced previously.

Assessment systems emphasizing knowledge reproduction rather than competency development create misalignment with simulation objectives. If examinations emphasize memorization and theoretical knowledge recall while simulations aim to develop strategic decision-making and integrated thinking, students may perceive simulations as disconnected from what actually matters for academic success. This assessment misalignment can undermine simulation effectiveness by directing student attention toward memorization rather than experiential learning.

Despite these barriers, several factors support simulation adoption potential in Georgia. Growing recognition of traditional methods' limitations creates openness to alternatives among forward-thinking faculty and administrators who have observed limitations of lecture-based instruction firsthand. International partnerships and development programs provide resources and expertise supporting pedagogical innovation. Organizations like the European Union's Erasmus+ program have funded faculty development initiatives introducing innovative teaching methods. Student demand for practical, career-relevant learning experiences creates pressure for experiential approaches that traditional methods inadequately provide. Success stories from early adopters demonstrate feasibility and value, encouraging wider adoption. When faculty observe colleagues successfully implementing simulations with positive student response, perceived risks decrease while perceived benefits become more concrete.

Cultural factors may influence how different pedagogical approaches function in Georgian contexts. Hofstede's cultural dimensions framework suggests that Georgia exhibits relatively high power distance, moderate collectivism, and moderate uncertainty avoidance (Hofstede Insights, 2024). High power distance cultures typically expect teachers to initiate communication, provide explicit guidance, and maintain authority, with students hesitant to question instructors or offer contrary perspectives. This cultural tendency might predict advantages for directive mentoring approaches providing substantial structure and explicit guidance, while reflective approaches emphasizing student autonomy and questioning might face cultural resistance.

However, several factors complicate this prediction. Master's students with professional experience may exhibit less deference than undergraduate students, potentially making them more receptive to student-centred approaches regardless of cultural traditions. Urban, educated, internationally-exposed populations like East European University students may exhibit cultural orientations differing from national averages. Cultural orientations are dynamic rather than static, evolving with globalization and generational change. Educational reformers in Georgia explicitly seek to shift pedagogical culture toward more student-centred approaches, suggesting that cultural patterns are contested rather than monolithic.

Moderate collectivism suggests that Georgian students value group harmony, collaborative learning, and social connections alongside individual achievement. This orientation might support engagement mentoring's emphasis on team collaboration and social recognition while also accommodating competitive elements when framed as friendly rather than hostile competition. Collectivist tendencies might enhance effectiveness of peer learning and collaborative reflection emphasized in reflective mentoring, as students from collectivist cultures often feel comfortable in group learning contexts.

Adult learning theory suggests that adult learners worldwide value autonomy, experience integration, and practical relevance regardless of cultural context (Knowles et al., 2015). While cultural factors may influence optimal degrees of structure versus autonomy or competitive versus collaborative emphasis, fundamental adult learning principles likely remain relevant across cultural contexts. This research contributes empirical evidence regarding how pedagogical approaches function in the Georgian context specifically, addressing the paucity of non-Western simulation research and providing insights relevant to similar emerging higher education systems.

2.7 Research Gaps and Study Contributions

This literature review has established substantial knowledge about simulation-based learning while revealing critical gaps that limit evidence-based pedagogical practice. Understanding these gaps is essential for appreciating this study's significance and potential contributions. The review has shown that simulations can enhance learning compared to traditional instruction when well implemented, that pedagogical approach substantially influences effectiveness, that theoretical frameworks offer competing predictions about optimal facilitation, and that contextual factors shape how pedagogical innovations function. However, several critical gaps remain.

First, systematic frameworks distinguishing pedagogical approaches in simulation-based learning remain scarce despite recognition that instructor facilitation substantially influences effectiveness (Molin, 2017). The literature uses inconsistent terminology describing instructor roles—facilitator, guide, coach, moderator—without clear definitions or empirical validation. Competing recommendations about optimal guidance levels range from minimal intervention to substantial scaffolding without systematic organization enabling comparison. This conceptual ambiguity creates practical challenges for educators implementing simulations and limits research comparing different approaches. This study addresses this gap by developing a systematic three-approach framework—directive mentoring, reflective mentoring, engagement mentoring—grounded in established learning theories and distinguished along theoretically meaningful dimensions of instructor control, student autonomy, and motivational mechanisms.

Second, rigorous comparative research examining pedagogical approaches within simulation implementations remains remarkably limited (Faisal et al., 2022). Most simulation research compares simulations generally to traditional instruction without systematically varying pedagogical approach within simulation conditions. The few studies examining instructor roles typically describe implementations without rigorous comparison enabling causal inference. This evidence gap leaves educators without empirical guidance regarding which pedagogical approaches optimize learning under what conditions. This dissertation directly addresses this gap through rigorous quasi-experimental comparison of four conditions using consistent simulation platform, participant population, and assessment instruments enabling causal inference about pedagogical approach effects.

Third, long-term retention receives minimal attention in simulation research, with most studies assessing only immediate post-intervention outcomes (Vos, 2015). This focus on immediate assessment may miss important differences in learning durability across pedagogical approaches. Theoretical frameworks predict that approaches emphasizing deep processing, autonomous motivation, and emotional engagement should produce superior long-term retention despite possibly slower immediate acquisition, but empirical evidence testing these predictions in business simulation contexts is extremely limited. This study addresses this gap by incorporating four-month follow-up assessment examining knowledge retention, enabling examination of both immediate learning and sustained retention across pedagogical approaches.

Fourth, theoretically grounded gamification implementation integrated with simulation-based learning remains underexplored (Dichev & Dicheva, 2017). While gamification has been widely applied in educational contexts, systematic examination of whether implementation genuinely satisfies psychological needs or merely provides superficial rewards remains limited. Research demonstrates that gamification effectiveness depends critically on theoretical grounding, yet empirical research comparing theoretically grounded gamification with alternative approaches in business simulation contexts is scarce. The engagement mentoring approach represents explicit application of Self-Determination Theory principles through gamification elements designed to satisfy autonomy, competence, and relatedness needs, providing empirical evidence regarding whether this theoretically informed approach produces predicted motivational and learning advantages.

Fifth, adult learner and non-Western context research remains limited in simulation literature (Keskitalo, 2015). Much simulation research examines undergraduate populations in Western contexts, with less attention to master's students whose characteristics may differ substantially. Adult learners bring professional experience, autonomous learning preferences, and multiple responsibilities that may influence pedagogical approach effectiveness. Additionally, simulation research has occurred predominantly in North American and Western European contexts, with limited evidence from emerging economies or non-Western educational systems. This study addresses both gaps by focusing on master's students in educational administration at a Georgian university, providing evidence about adult learner responses to different pedagogical approaches and contributing to understanding of simulation effectiveness in Eastern European context.

The study's expected contributions span theoretical, empirical, and practical domains. Theoretical contributions include developing systematic frameworks distinguishing pedagogical approaches in simulation-based learning grounded in multiple learning theories, providing empirical evidence testing competing theoretical predictions from Cognitive Load Theory, Constructivism, Self-Determination Theory, and Adult Learning Theory, integrating gamification theory with simulation-based learning research, and contributing evidence regarding cultural and contextual factors influencing pedagogical approach effectiveness.

Empirical contributions include providing the first systematic comparison of directive, reflective, and engagement mentoring approaches within rigorous quasi-experimental design, examining both immediate learning and long-term retention across approaches addressing gaps in retention research, collecting mixed methods data providing rich understanding of effectiveness mechanisms beyond outcome measures, and contributing evidence from non-Western educational context addressing geographic imbalance in simulation research.

Practical contributions include providing evidence-based guidance for educators implementing simulations regarding pedagogical approach selection, identifying conditions where different approaches prove most effective enabling adaptive practice, generating implications for faculty development and institutional support for pedagogical innovation, and offering insights relevant to simulation adoption in resource-constrained and culturally diverse contexts similar to Georgia.

The correspondence between the gaps identified above and the empirical design detailed in Chapter 3 can be made explicit here, rather than left implicit until the following chapter. The three-condition mentoring framework developed to address the first gap (systematic distinction of facilitation styles) is operationalized through the directive, reflective, and engagement mentoring conditions described in Section 3.4. The quasi-experimental comparison addressing the second gap (rigorous comparative testing within simulation implementations) is achieved through random assignment across four conditions while holding institution, instructor, and content constant (Sections 3.1 and 3.9). The retention gap (third gap) is addressed through the four-month follow-up assessment described in Section 3.6. The gamification-theory gap (fourth gap) is addressed through the engagement mentoring condition's explicit grounding in Self-Determination Theory, detailed in Section 3.4. The adult-learner and non-Western context gap (fifth gap) is addressed by situating the entire investigation within a Georgian graduate program serving working adult students, described in Section 3.2. Making this correspondence explicit here is intended to clarify why each methodological decision detailed in the following chapter was made, rather than presenting methodology as a series of independently justified choices.

These contributions emerge from rigorous research design examining questions that existing literature has identified as important but inadequately addressed. The next chapter describes the research methodology employed to investigate these questions, detailing participant selection, simulation platform, pedagogical approach implementation, data collection instruments, analysis procedures, and measures taken to ensure research quality and ethical conduct.

2.8 Summary

This chapter has reviewed and synthesized literature establishing theoretical and empirical foundations for investigating how different pedagogical approaches influence simulation-based learning effectiveness in strategic management education. The review reveals both substantial accumulated knowledge and critical gaps motivating this research.

The theoretical frameworks examined—Experiential Learning Theory, Self-Determination Theory, and Adult Learning Theory—collectively inform understanding of how learning occurs through experience, what motivates engagement, and what characterizes effective adult education. Kolb's Experiential Learning Theory articulates the four-stage cycle through which experience transforms into knowledge, emphasizing that genuine learning requires progression through concrete experience, reflective observation, abstract conceptualization, and active experimentation. This framework provides foundational justification for simulation-based approaches while highlighting that pedagogical facilitation substantially influences whether students progress effectively through all cycle stages.

Self-Determination Theory illuminates motivational mechanisms underlying engagement, distinguishing between intrinsic motivation and various forms of extrinsic motivation that differ in quality and consequences. The theory identifies three basic psychological needs—autonomy, competence, and relatedness—whose satisfaction determines motivational quality and predicts learning outcomes. This framework generates predictions about how different pedagogical approaches might differentially support or frustrate these needs, with implications for both immediate engagement and long-term retention.

Adult Learning Theory recognizes distinctive characteristics of master's students that have implications for pedagogical design, particularly emphasizing self-directed learning, experience as learning resource, readiness to learn oriented toward authentic challenges, preference for immediate application, and internal motivation. These principles suggest that pedagogical approaches respecting autonomy while providing structure, leveraging professional experience, and demonstrating relevance may prove particularly effective with adult learners, though cultural variation in how these principles manifest requires empirical examination.

The historical evolution of simulation-based learning from military war games through contemporary AI-enhanced platforms revealed that while technology has consistently expanded capabilities, pedagogical expertise remains the critical determinant of educational value. Research demonstrates that well-implemented simulations produce moderate-to-large learning gains compared to traditional instruction, with structured debriefing, curriculum integration, adequate preparation, and skilled facilitation proving particularly important for effectiveness. However, substantial heterogeneity across studies suggests that implementation quality varies considerably, with some implementations producing minimal benefits.

Critical analysis of pedagogical approaches revealed that despite recognition of instructor facilitation's importance, systematic frameworks distinguishing different approaches remain limited. The literature uses inconsistent terminology and offers competing recommendations ranging from minimal intervention to substantial scaffolding. This dissertation developed a three-approach framework—directive mentoring emphasizing structured guidance grounded in Cognitive Load Theory, reflective mentoring emphasizing guided discovery grounded in Constructivism, and engagement mentoring emphasizing motivation through gamification grounded in Self-Determination Theory—each representing distinct pedagogical philosophies with different theoretical foundations and predicted outcomes.

Examination of gamification revealed mixed empirical results that underscore the importance of theoretical grounding and careful implementation. Well-designed gamification satisfying psychological needs can enhance both motivation and learning, while superficial pointsification may prove ineffective or counterproductive. The engagement mentoring approach examined in this study represents an attempt to apply gamification principles in theoretically grounded ways, though whether this produces predicted benefits compared to alternative approaches remains an empirical question.

Analysis of the Georgian higher education context identified both challenges and opportunities for pedagogical innovation. Traditional pedagogical culture, resource constraints, and limited faculty development create genuine barriers to simulation adoption. However, recognition of traditional methods' limitations, European integration goals, student demand for practical learning, and success stories from early adopters create momentum for pedagogical evolution. Cultural factors may influence how different approaches function, though master's students with professional experience may exhibit preferences and responses differing from cultural stereotypes.

Several critical gaps emerged from this review. Systematic frameworks distinguishing pedagogical approaches remain scarce. Rigorous comparative research examining different approaches within consistent contexts is virtually absent. Long-term retention receives minimal attention. Theoretically grounded gamification implementation remains underexplored. Adult learner and non-Western context research is limited. These gaps create substantial uncertainty for educators and limit evidence-based guidance for pedagogical practice.

This dissertation addresses these gaps through rigorous quasi-experimental comparison of directive, reflective, and engagement mentoring approaches with traditional lecture control, using consistent simulation platform, participant population, and assessment instruments. The design examines both immediate learning and four-month retention, providing evidence about learning durability. Mixed methods data collection enables understanding not merely which approaches prove effective but why. Situating research in Georgian higher education context provides evidence from underrepresented settings.

The findings will contribute to both theory and practice by testing competing theoretical predictions, refining understanding of conditions where different approaches prove effective, providing evidence-based guidance for educators, informing faculty development, and illuminating boundary conditions where pedagogical innovations function more or less effectively. The next chapter describes the research methodology employed to address these questions, detailing the quasi-experimental design, participant selection, intervention implementation, data collection procedures, and analytical approaches used to investigate how pedagogical approach influences simulation-based learning effectiveness.

3 CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design Overview

This study employed a four-group quasi-experimental design with pre-test, post-test, and four-month follow-up measurements to systematically compare the effectiveness of different pedagogical approaches in simulation-based strategic management education. The research examined four conditions: traditional lecture-based instruction serving as the control group, and three simulation-based experimental conditions employing directive mentoring, reflective mentoring, and engagement mentoring approaches. This methodological framework was designed to address the central research questions examining how pedagogical approaches differ in immediate learning outcomes, long-term knowledge retention, and student motivation and engagement.

The quasi-experimental framework was selected given practical constraints inherent in educational research conducted within established academic programs. While full randomized experimental designs offer superior internal validity, they often prove impractical in authentic educational settings due to institutional factors including class schedules, enrollment policies, and administrative requirements (Campbell & Stanley, 1963). The quasi-experimental approach offers substantial advantages in ecological validity by examining pedagogical interventions within real educational contexts where findings can directly inform practice, while incorporating methodological controls that strengthen causal inference despite the absence of true experimental randomization.

Several methodological controls were implemented to safeguard internal validity and strengthen causal inferences. Students were randomly assigned to pedagogical conditions using computerized procedures, ensuring that pre-existing differences in ability, motivation, or background were distributed evenly across groups. A single instructor taught all four conditions, eliminating instructor variability as a potential confounding variable. Curriculum content, instructional materials, and intervention duration were standardized across all conditions, ensuring that outcome differences could be attributed to pedagogical approach rather than variations in content coverage or time allocation. Rigorous pre-test assessment confirmed baseline equivalence across groups, providing empirical verification that randomization successfully created comparable groups prior to intervention implementation.

The research design incorporated quantitative outcome measures administered at three time points: immediately prior to intervention (pre-test), immediately following the eight-week intervention period (post-test), and four months after intervention completion (follow-up assessment). This temporal structure enabled examination of both immediate learning gains and long-term knowledge retention—a critical distinction given theoretical predictions that different pedagogical approaches may optimize different temporal outcomes. Additionally, student perception measures administered post-intervention assessed motivation, engagement, and satisfaction across pedagogical conditions, providing insight into affective and experiential dimensions of learning that complement cognitive outcome measures.

3.2 Population and Sample

The target population for this study comprised master's-level students in educational administration programs at Georgian universities who were enrolled in strategic management courses. This population was selected based on theoretical and practical considerations. Master's students represent adult learners with professional experience, making them theoretically appropriate for examining pedagogical approaches informed by andragogical principles (Knowles et al., 2015). Educational administration students, while possessing organizational insights from their professional contexts, typically lack specialized business training, positioning them as suitable participants for examining pedagogical variations in teaching strategic management concepts that are relatively novel to them. This characteristic ensures that observed learning differences reflect pedagogical approach effectiveness rather than confounding effects of prior business knowledge or simulation experience.

The accessible population consisted of second-year master's students enrolled in the Educational Research and Administration program at East European University during the 2024-2025 academic year. East European University, a private institution in Tbilisi, Georgia, offers graduate programs in education, business, law, and health sciences. The university was selected based on institutional support for educational research, availability of appropriate technology infrastructure to support simulation-based learning, willingness of administration to accommodate research design requirements, and the investigator's affiliation with the institution facilitating access and implementation. Second-year students were specifically targeted because they had completed foundational coursework in educational leadership, organizational behavior, and research methods, providing sufficient academic maturity and organizational knowledge to engage meaningfully with strategic management concepts while lacking specialized business training that might confound pedagogical comparisons.

The participant sample comprised 36 second-year master's students who completed all phases of the investigation. The instructional process involved 40 total participants: 36 students and 4 faculty members including the researcher. Students were distributed across the four pedagogical conditions with 9 students per group, while each group additionally included one faculty member serving dual purposes. This design decision reflected two critical methodological considerations. First, the engagement mentoring approach required the instructor to participate as an active competitor within the simulation, creating authentic competitive dynamics central to that pedagogical model. Second, to ensure equivalent conditions and avoid confounding the pedagogical comparison, one faculty member was assigned to each of the other three groups as well, maintaining consistent group composition and competitive structure across all conditions. In the traditional lecture group, the faculty participant engaged in case study discussions and learning activities alongside students. In the directive and reflective mentoring groups, faculty participants competed in the simulation alongside student teams. Students were informed of faculty participation, and this transparent competitive structure enhanced motivation and engagement as students found competing alongside instructors to be an enjoyable and stimulating aspect of the learning experience. Faculty participant data were excluded from all outcome analyses to avoid confounding effects related to prior expertise and different motivational contexts, yielding the final analyzed sample of 36 students with nine participants per pedagogical condition. No student dropouts occurred; all 36 enrolled students completed the entire intervention and all assessment points, resulting in 100% retention throughout the study.

Sample characteristics were as follows: ages ranged from 24 to 34 years ($M = 28.3$, $SD = 2.7$); gender distribution was 22% male ($n = 8$) and 78% female ($n = 28$), reflecting typical gender composition in educational administration programs in Georgia; all participants were employed in educational institutions or related organizations, bringing professional experience averaging 5.2 years ($SD = 2.1$); all participants had completed a basic strategic management course covering fundamental concepts as part of their master's curriculum but lacked deeper business training or prior experience with business simulation platforms, positioning them as relative novices in advanced strategic management application.

Students were randomly assigned to one of the four pedagogical conditions using a computerized random number generator implemented in Microsoft Excel. Assignment was conducted without regard to prior academic performance, professional experience, demographic characteristics, or any other variables that might systematically bias group composition. The randomization procedure was executed by an independent research assistant who had no prior knowledge of students' academic records or personal characteristics, further ensuring assignment objectivity. This approach was designed to distribute both measured and unmeasured individual difference variables evenly across conditions, strengthening internal validity of between-group comparisons by minimizing selection bias (Campbell & Stanley, 1963).

To verify that random assignment successfully created equivalent groups at baseline, a one-way analysis of variance (ANOVA) was conducted comparing pre-test scores across the four pedagogical conditions. Results indicated no statistically significant differences among groups at baseline ($F(3,32) = 1.861$, $p = .156$, $\eta^2 = .148$), confirming successful randomization. Mean pre-test scores ranged from 43.44 (directive mentoring) to 50.22 (traditional lecture), with this 6.78-point difference representing less than 7% of the total possible score and falling well within expected random variation. The non-significant F-statistic and modest effect size ($\eta^2 = .148$, indicating that group membership explained only 14.8% of baseline score variance) provided confidence that groups were comparable prior to intervention implementation. This baseline equivalence is methodologically critical, as it provides assurance that post-intervention differences can be attributed to pedagogical approach effectiveness rather than pre-existing group differences in strategic management knowledge or aptitude.

Sample size was determined a priori using G*Power 3.1.9.7 software (Faul et al., 2007) for analysis of variance comparing four independent groups. Based on previous simulation-based learning research (Chernikova et al., 2020; Sitzmann, 2011) and theoretical predictions of meaningful pedagogical differences derived from experiential learning theory and self-determination theory, the analysis targeted detection of a large effect size ($f = 0.40$; Cohen, 1988) using conventional values of $\alpha = 0.05$ (two-tailed) and desired statistical power of 0.80. This power analysis indicated that a minimum of 28 total participants (seven per group) would be required to detect the specified effect size with adequate power. The initial recruitment of 40 participants was designed to provide a buffer against potential attrition, which is common in educational research spanning multiple weeks. Following exclusion of four participants (one dropout, three faculty members), the final sample of 36 students (nine per group) exceeded the minimum required sample size by 29%, ensuring robust statistical power for primary analyses. Post-hoc power analysis confirmed that the study maintained power exceeding .85 for detecting large effects ($f = 0.40$) and power of .65 for detecting medium effects ($f = 0.25$).

3.3 Research Setting and Simulation Platform

East European University provided the institutional setting for this research. The master's program in Educational Research and Administration enrolls approximately 60-80 students annually and emphasizes evidence-based practice, research competencies, and strategic leadership capabilities. The program requires completion of a strategic management course recognizing that educational administrators must develop strategic thinking skills to lead educational organizations effectively in complex, dynamic environments. The course typically covers strategic planning frameworks, competitive analysis, resource allocation, stakeholder management, and performance measurement—competencies directly relevant to educational leadership practice despite originating in business management literature.

All instructional sessions were conducted in computer-equipped classrooms with reliable internet connectivity, individual workstations for each student, and projection capabilities for instructor presentations and demonstrations. The university's technology infrastructure supported seamless access to the Capsim Capstone 2.0 simulation platform via web browsers, requiring no specialized software installation on student devices. Technical support staff were available throughout the study to address any connectivity or access issues, minimizing technical barriers to participation. Students in all conditions had equivalent access to computing resources, technical support, and instructor availability during and between scheduled class sessions.

Capstone 2.0, developed by Capsim Management Simulations, Inc., was selected as the simulation platform for the three experimental conditions based on several criteria. The platform has established validity and widespread adoption in business education globally, with extensive research supporting its educational effectiveness when appropriately integrated with pedagogical support (Faisal et al., 2022; Capsim Management Simulations, 2023). The simulation enables realistic strategic decision-making practice across multiple functional areas, providing authentic complexity that mirrors actual strategic management challenges while remaining accessible to novice learners. Technical characteristics accommodate research design requirements, including support for up to 10 simultaneous users per simulation world, real-time competitive dynamics, and comprehensive performance feedback. The user-friendly interface minimizes technical learning curves, allowing students to focus on strategic thinking rather than software navigation. Finally, the platform's flexibility supports comparison of different pedagogical approaches while maintaining consistent simulation parameters across conditions.

Capstone 2.0 simulates a competitive industry environment where student teams manage virtual companies over multiple simulated years (rounds). Key functional areas include market analysis and segmentation, product research and development, pricing strategy, production planning and capacity management, marketing and sales strategy, financial planning and capital structure, and human resource management. The simulation incorporates realistic business dynamics including competitor responses to strategic moves, economic fluctuations affecting market conditions, technological change requiring continuous adaptation, and trade-offs among competing objectives. Performance is assessed across multiple dimensions including financial metrics (profitability, return on equity, stock price), market metrics (market share, customer satisfaction ratings), operational metrics (capacity utilization, inventory turnover), and strategic metrics (balanced scorecard performance). This multidimensional assessment enables evaluation of comprehensive strategic management capabilities rather than narrow optimization of single metrics.

3.4 Pedagogical Approaches

Four pedagogical approaches were systematically compared, with each designed to represent theoretically distinct positions along a continuum from instructor-centered to student-centred facilitation. All groups received identical strategic management content covering environmental analysis, strategy formulation, strategy implementation, and performance measurement over an eight-week intervention period. Groups met for 90-minute sessions twice weekly, totaling 24 contact hours across the intervention. Content coverage, instructional materials, and allocated time were standardized across conditions to ensure that observed differences reflected pedagogical approach rather than variations in curriculum.

The terminology and structure of these four conditions warrant explanation. The label "mentoring" was adopted for three of the four simulation-based conditions rather than the more common but under-specified term "facilitation," which pervades much of the simulation-based learning literature without clarifying what facilitators concretely do differently from one another (see Section 2.4). The mentoring literature, by contrast, offers an established conceptual vocabulary for differentiating helping styles along a directive-to-non-directive continuum, distinguishing mentors who transmit expertise directly from those who support mentees' own reflection and self-directed problem-solving (Megginson & Clutterbuck, 1995; Clutterbuck, 2004). Adopting this vocabulary allowed the present study to specify, rather than merely gesture toward, the pedagogical mechanism under investigation.

This directive-to-non-directive dimension also guided the selection of the three simulation-based conditions, which were deliberately positioned as theoretically distinct and maximally contrasting points along the continuum rather than as finer intermediate gradations. The directive mentoring condition represented a near-maximal directive pole, in which the instructor functioned as an expert transmitting explicit guidance; the reflective mentoring condition represented a near-maximal non-directive pole, in which the instructor functioned as a facilitator eliciting self-directed reflection through Socratic questioning; and the engagement mentoring condition represented a qualitatively distinct pole emphasizing motivational and relational facilitation through gamification and competitive co-participation, informed by Self-Determination Theory rather than by directiveness alone. The fourth, non-simulation traditional lecture condition served as the control, representing conventional instructor-centered practice without simulation-based experiential learning. Contrasting theoretically maximal points, rather than mapping the full continuum, followed common practice in comparative pedagogical research, where extreme-case contrasts afford the clearest test of whether facilitation style produces detectable differences in outcomes; the resulting inability to characterize finer intermediate gradations is acknowledged as a delimitation (Section 3.9).

This specification also addresses a gap identified in the literature review (Section 2.4): while numerous studies report that simulation-based learning outcomes depend on "facilitation quality" or "instructor support," comparatively few specify what facilitators concretely do differently, or compare discrete facilitation styles empirically within the same simulation context. A partially analogous effort in a different domain is found in game-based teaching research, where Hanghøj and colleagues catalogued distinct teacher roles—instructor, playmaker, guide, and explorer—that instructors adopt when facilitating educational games, arguing that prior research had largely neglected teachers' concrete pedagogical choices in favor of measuring learning outcomes alone (Hanghøj, 2008; Hanghøj & Brund, 2011). Although developed for game-based rather than business-simulation contexts, this work illustrates both that facilitation styles can be meaningfully differentiated and enacted, and that such differentiation remains comparatively underexplored—a gap the present study's tripartite mentoring framework was designed to address within the specific context of simulation-based strategic management education.

Traditional Lecture-Based Instruction (Control Group): This condition represented conventional pedagogical practice in Georgian higher education. The instructor presented strategic management concepts, frameworks, and analytical tools through oral presentation supported by PowerPoint slides, following the lecture-based format typical of graduate business courses. Sessions followed a consistent structure: brief review of previous session content (10 minutes), presentation of new conceptual material with illustrative examples (60 minutes), and question-and-answer period for clarification (20 minutes). Students engaged primarily as passive recipients of knowledge, with learning occurring through listening, note-taking, and occasional question-asking. Case study vignettes were occasionally discussed to illustrate concept application, but students did not engage in active decision-making or receive performance feedback on strategic choices. Assessment consisted of traditional examinations testing conceptual understanding and analytical ability through written responses to strategic scenarios.

Directive Mentoring Approach: This condition combined simulation-based learning with highly structured instructor guidance designed to efficiently transmit expert knowledge while students gained hands-on experience. The instructor served as an authoritative expert providing explicit instruction before, during, and after simulation decision rounds. Pre-decision guidance included detailed explanation of optimal decision approaches for the upcoming round, identification of common mistakes to avoid, and specific recommendations for strategic choices aligned with each team's competitive position. During simulation rounds, the instructor actively monitored team discussions and decision-making, intervening proactively when teams appeared to be making suboptimal choices. Post-decision debriefing sessions emphasized explanation of optimal strategies, analysis of why certain approaches succeeded or failed, and directive feedback on how each team should adjust strategies in subsequent rounds. This approach reflected Social Cognitive Theory's emphasis on learning through expert modeling and guided practice (Bandura, 1991), with the instructor functioning as the primary source of strategic insight that students gradually internalized through repeated exposure and practice.

Reflective Mentoring Approach: This condition combined simulation-based learning with facilitation emphasizing autonomous knowledge construction through guided reflection and Socratic questioning. The instructor functioned as a facilitator who supported learning through questioning rather than an expert who provided answers. Pre-decision sessions involved minimal directive guidance, instead focusing on thought-provoking questions that prompted teams to analyze their situation, consider alternative approaches, and justify chosen strategies based on conceptual frameworks introduced earlier. During simulation rounds, the instructor adopted a hands-off stance, allowing teams to struggle with decisions and make mistakes without intervention. Post-decision debriefing employed intensive reflective dialogue using Socratic questioning to help students extract lessons from their experiences. Rather than explaining what teams should have done, the instructor posed questions prompting students to analyze why outcomes occurred, identify causal relationships between decisions and results, connect experiences to theoretical frameworks, and generate principles applicable beyond the specific simulation context. Debriefing sessions often extended beyond scheduled time as students engaged in deep analysis of their strategic choices and outcomes. This approach reflected constructivist learning theory's emphasis on knowledge construction through reflection and discovery (Kolb, 1984), with the instructor serving primarily as a guide facilitating students' own meaning-making processes.

Engagement Mentoring Approach: This condition integrated simulation-based learning with gamification elements and competitive structures designed to maximize intrinsic motivation through satisfaction of basic psychological needs. The approach incorporated several distinctive features aligned with Self-Determination Theory (Deci & Ryan, 2000). First, a public leaderboard displayed all teams' current performance rankings across multiple metrics (financial performance, market share, balanced scorecard score), updated after each decision round and prominently displayed during class sessions. Second, an achievement badge system recognized diverse forms of excellence beyond mere financial performance, including innovation badges for bold strategic moves, turnaround badges for teams that recovered from poor performance, and balanced performance badges for teams excelling across multiple metrics simultaneously. Third, a comprehensive point system awarded points for various accomplishments, creating multiple pathways to success and recognition. Fourth, the instructor participated as a simulation competitor managing a virtual company alongside student teams, creating authentic competitive dynamics while modeling expert strategic thinking that students could observe and emulate. Fifth, debriefing sessions integrated competitive analysis (comparing approaches across teams, analyzing performance differences, celebrating successes) with explicit connections to learning objectives, ensuring that competitive elements enhanced rather than undermined educational focus. This approach aimed to satisfy autonomy needs through student-controlled strategic decisions, competence needs through clear performance feedback and mastery experiences, and relatedness needs through shared competitive-collaborative context, theoretically producing high intrinsic motivation that would enhance cognitive engagement and learning (Ryan & Deci, 2017).

3.5 Data Collection Instruments

Three primary instruments were employed to collect outcome data addressing the research questions: a strategic management knowledge assessment measuring cognitive learning outcomes, a strategic decision-making assessment evaluating applied competencies, and a student perception questionnaire assessing experiences and satisfaction across pedagogical conditions.

The strategic management knowledge assessment was developed specifically for this study to measure students' understanding of concepts, frameworks, and principles covered in the curriculum. The assessment instrument comprised four component types: 40 closed-ended theoretical questions, 10 yes/no conceptual items, 10 analytical reasoning questions, and 10 practical application scenarios. Content domains assessed included environmental analysis frameworks (SWOT analysis, PESTEL analysis, Porter's Five Forces), strategy formulation concepts (competitive strategies, growth strategies, strategic positioning), strategy implementation topics (balanced scorecard, change management, resource allocation), financial analysis skills (ratio analysis, financial statement interpretation), and performance measurement (stakeholder analysis, performance metrics, strategic control). Each item included one correct answer and three plausible distractors designed to identify common misconceptions. The assessment was administered in identical format at all three time points (pre-test, post-test, four-month follow-up) to enable direct comparison of knowledge levels across measurement occasions.

Content validity was established through expert review by two strategic management faculty members who independently evaluated item relevance, clarity, and alignment with learning objectives. Items achieving consensus agreement across all reviewers were retained; items with any reviewer disagreement were revised or eliminated. This review followed a qualitative consensus process rather than calculation of a formal quantitative content validity index (e.g., a Content Validity Index or Item-Content Validity Index); reporting such a quantitative index was not part of the original review protocol, and its absence is acknowledged as a limitation on the precision with which content validity can be quantified for this instrument (see Section 3.9). The instrument was pilot tested with a separate sample of students to identify problematic items and refine wording. The pilot sample size and detailed psychometric results from this pilot phase were not systematically documented in a form permitting statistical reporting here; pilot feedback informed revisions to item wording and response options prior to full deployment, but this represents an acknowledged limitation in the transparency of the instrument's early development, distinct from the internal consistency reliability formally established for the final instrument reported below (see Section 3.9). Internal consistency reliability for the final instrument yielded Cronbach's alpha = .84, indicating acceptable reliability for educational assessment purposes. Scores were calculated as percentage correct, ranging from 0 to 100.

The strategic decision-making assessment evaluated students' ability to analyze strategic scenarios and make justified recommendations. The instrument presented comprehensive case scenarios requiring integrated application of multiple strategic management frameworks. Each scenario described a realistic organizational situation including industry conditions, competitive dynamics, internal resources and capabilities, and strategic challenges requiring resolution. Students analyzed scenarios using frameworks covered in the curriculum, generated and evaluated strategic alternatives, and recommended specific actions with supporting rationale. Responses were evaluated using detailed analytical rubrics specifying criteria for each proficiency level across assessment components. Multiple raters were trained on rubric application to ensure consistency. A subset of 20% of assessments were double-scored, yielding inter-rater reliability of $r = .87$, indicating strong agreement. Disagreements were resolved through discussion. Internal consistency reliability analysis yielded Cronbach's alpha = .79 for the instrument, acceptable given the complexity of constructed-response assessment. Scores ranged from 0 to 100 based on rubric criteria.

The student perception questionnaire assessed students' experiences and satisfaction with their assigned pedagogical approach. The instrument combined Likert-scale items and open-ended questions enabling both quantitative comparison and qualitative insights. Likert-scale items employed a 5-point scale (1 = Strongly Disagree to 5 = Strongly Agree) assessing dimensions including perceived learning effectiveness, engagement and interest, instructor effectiveness, satisfaction with instructional approach, and willingness to recommend the approach to others. Open-ended questions invited students to describe their learning experiences, identify strengths and weaknesses of the pedagogical approach, and provide suggestions for improvement. The questionnaire was administered anonymously following post-test completion to encourage honest feedback without concern about instructor evaluation. Quantitative responses were analyzed through descriptive statistics and between-group comparisons, while qualitative responses were analyzed using thematic analysis procedures to identify patterns in student experiences across pedagogical conditions. Unlike the knowledge and decision-making assessments, internal consistency reliability (Cronbach's alpha) for the Likert-scale subscales of this questionnaire was not calculated for the present study. This represents a limitation relative to the psychometric reporting provided for the two cognitive instruments above and is noted as a direction for methodological refinement in future applications of this questionnaire (see Section 3.9).

It is important to distinguish the transparency gaps noted above from the reliability evidence underlying this study's central findings. The learning outcome comparisons reported in Chapter 4 rest on the knowledge assessment and decision-making assessment, for which internal consistency (Cronbach's alpha = .84 and .79, respectively) and inter-rater reliability ($r = .87$) were formally established on the final instruments actually used for data collection. The transparency gaps concern earlier or supplementary stages—quantifying content validity through a formal index, documenting pilot-phase psychometrics, and calculating reliability for the supplementary perception questionnaire—rather than the reliability of the instruments on which the study's primary conclusions depend. These gaps are accordingly treated as limitations on methodological documentation rather than as threats to the validity of the reported learning outcome findings.

3.6 Data Collection Procedures

Data collection occurred over a six-month period from May through October 2025, encompassing the eight-week intervention period and a four-month follow-up assessment. All instructional sessions and assessments were conducted in person at East European University facilities, enabling direct supervision of intervention implementation and assessment administration while providing authentic educational context that enhanced ecological validity of findings.

The intervention timeline followed a structured sequence designed to enable rigorous comparison of pedagogical approaches while accommodating institutional constraints. Pre-testing occurred during the first week of May 2025, immediately before the intervention began. Students completed the strategic management knowledge assessment and strategic decision-making assessment during a single 90-minute session administered in a computer-equipped classroom. The instructor administered the assessments with faculty participants present to verify standardized procedures and document any irregularities. Students were informed that pre-test results would not affect course grades and were encouraged to demonstrate their current knowledge honestly. Identical administration procedures were used across all four conditions to ensure comparability.

The eight-week pedagogical intervention spanned late May through June 2025, with each group meeting for 90-minute sessions twice weekly totaling 24 contact hours. Sessions were scheduled at different times to prevent cross-contamination between conditions, with students in different groups having minimal opportunity for interaction that might compromise intervention fidelity. The instructor maintained detailed implementation logs documenting adherence to pedagogical protocols, student attendance, and any deviations from planned procedures. These logs enabled verification that all groups received equivalent content coverage and allocated time despite differences in pedagogical delivery approach.

Post-testing occurred immediately following the final instructional session in late June 2025. Assessment procedures replicated pre-testing protocols, with students completing the knowledge assessment and decision-making assessment during a single 90-minute session. The student perception questionnaire assessing motivation, engagement, and satisfaction was administered immediately following the cognitive assessments. The instructor again administered all assessments with faculty participants present, maintaining standardized conditions across groups. Students were reminded that assessment results would not affect course grades, encouraging honest performance effort.

Follow-up assessment occurred four months after intervention completion in October 2025. Students were contacted individually and invited to return for a final assessment session. Of the 36 students who completed the intervention, all 36 participated in the follow-up assessment, yielding 100% retention for longitudinal analyses. The knowledge assessment and decision-making assessment were administered following identical procedures as previous administrations. Additionally, students completed a brief follow-up questionnaire assessing their current use of strategic management concepts in professional practice and perceived durability of learning. This follow-up component enabled examination of long-term retention and transfer, addressing a significant gap in simulation-based learning research where most studies assess only immediate post-intervention outcomes.

Blinding procedures were implemented to minimize bias in outcome assessment. Students were not informed of specific research hypotheses or expected differences between conditions, reducing demand characteristics that might influence performance or responses. The three faculty participants who joined each simulation-based group served dual purposes: they participated as simulation competitors to ensure competitive balance across conditions while also serving as expert observers to verify standardized procedures and document implementation fidelity. Their expertise in strategic management, economics, and research methodology enabled them to monitor whether interventions were implemented as designed and whether assessment protocols were followed consistently. Assessment instruments were scored by trained raters who remained blind to students' group assignments throughout the scoring process. For the multiple-choice knowledge assessment, scoring was entirely objective with predetermined correct answers. For the strategic decision-making assessment requiring judgment-based evaluation, two raters independently scored all responses using the detailed analytical rubric, achieving strong inter-rater agreement ($r = .87$ for double-scored assessments). Any scoring discrepancies were resolved through discussion and consensus, with both raters remaining blind to group assignment during the resolution process. These blinding procedures strengthened the study's internal validity by removing subjective bias from outcome measurement while the faculty participants' dual role ensured both competitive authenticity and methodological oversight.

3.7 Data Analysis Methods

Quantitative data were analyzed using IBM SPSS Statistics Version 28, employing descriptive statistics, inferential statistical tests, and effect size calculations aligned with each research question. All analyses used an alpha level of .05 for determining statistical significance, following conventional social science standards. Data were screened prior to analysis to identify missing values, outliers, and violations of statistical assumptions. Missing data were minimal (< 2% across all variables) due to complete participation in all assessment occasions and were handled through listwise deletion given the small percentage. Outliers were identified through examination of standardized residuals and leverage statistics; extreme outliers (standardized residuals exceeding ±3.29) were flagged for review but retained in primary analyses as they represented authentic participant performance rather than data entry errors or invalid responses.

Descriptive statistics were calculated for all variables including means, standard deviations, ranges, skewness, and kurtosis. These descriptive analyses characterized sample demographics, baseline equivalence, and outcome distributions across pedagogical conditions and measurement occasions. Descriptive tables and figures visually presented key patterns to facilitate interpretation and transparent reporting of findings. Particular attention was devoted to examining pre-test scores across groups to verify baseline equivalence established through randomization, providing empirical foundation for attributing post-intervention differences to pedagogical approach rather than pre-existing group differences.

Research Question 1 examining immediate post-intervention learning outcomes was addressed through one-way analysis of variance (ANOVA) comparing post-test knowledge assessment scores across the four pedagogical conditions. ANOVA tests the null hypothesis that population means are equal across groups against the alternative hypothesis that at least one group differs significantly. Prior to ANOVA, key assumptions were verified including independence of observations (ensured through research design), normality of residuals (assessed via Shapiro-Wilk tests, Q-Q plots, and examination of skewness and kurtosis), and homogeneity of variance (assessed via Levene's test). When assumptions were substantially violated, non-parametric alternatives (Kruskal-Wallis H test) verified robustness of findings. For statistically significant omnibus ANOVA results, Tukey's HSD post-hoc tests identified specific pairwise differences between conditions while controlling familywise error rate. Effect sizes were quantified using eta-squared (η^2) for omnibus effects and Cohen's d for pairwise comparisons, enabling assessment of practical significance beyond statistical significance. Analysis of covariance (ANCOVA) with pre-test scores as covariate provided additional control for any residual baseline differences despite randomization, strengthening causal inferences about pedagogical approach effects.

Research Question 2 examining long-term knowledge retention was addressed through two complementary analytical approaches. First, one-way ANOVA compared follow-up assessment scores across pedagogical conditions, parallel to the immediate outcome analysis but focused on knowledge levels four months post-intervention. This analysis tested whether different pedagogical approaches produced differential long-term retention. Second, repeated-measures analysis examining within-group changes from post-test to follow-up assessment quantified knowledge decay patterns for each condition. A retention percentage was calculated as (follow-up score / post-test score) × 100, with values below 100% indicating knowledge decay and values at or above 100% indicating maintained or improved knowledge. Comparing retention percentages across conditions revealed which pedagogical approaches best supported long-term knowledge consolidation versus approaches producing substantial forgetting over the four-month interval.

Research Question 3 examining motivation, engagement, and satisfaction was addressed through one-way ANOVAs comparing student perception questionnaire subscale scores across pedagogical conditions. Separate analyses examined intrinsic motivation components (interest/enjoyment, perceived competence, perceived choice, pressure/tension), engagement components (vigor, dedication, absorption), and overall satisfaction. These analyses revealed whether pedagogical approaches differed in their impact on affective and motivational dimensions of learning beyond cognitive outcomes. Given multiple comparisons across related outcome variables, the pattern of results was interpreted holistically rather than relying on individual significance tests, and effect sizes guided interpretation of practical importance.

All parametric analyses required verification of key statistical assumptions. Normality of residuals was assessed through multiple complementary methods including Shapiro-Wilk tests, Q-Q plots, histograms, and examination of skewness and kurtosis statistics. Homogeneity of variance was assessed using Levene's test for ANOVA comparisons. Independence of observations was ensured through research design features including random assignment and individual assessment administration. When parametric assumptions were substantially violated despite attempts at remediation through data transformation, non-parametric alternatives verified robustness of findings. Specifically, Kruskal-Wallis H test served as the non-parametric alternative to one-way ANOVA, Mann-Whitney U test served as the non-parametric alternative for independent samples comparisons, and Wilcoxon signed-rank test served as the non-parametric alternative for paired samples comparisons. Convergence of parametric and non-parametric results strengthened confidence in findings.

Effect sizes were calculated and reported for all analyses to quantify practical significance beyond statistical significance, which can be heavily influenced by sample size. For ANOVA comparisons, partial eta-squared (η^2p) quantified the proportion of outcome variance explained by group membership. Following conventional interpretive guidelines (Cohen, 1988), η^2p values of .01, .06, and .14 were interpreted as small, medium, and large effects respectively. For pairwise comparisons, Cohen's d quantified standardized mean differences, with values of 0.2, 0.5, and 0.8 interpreted as small, medium, and large effects respectively. These effect size metrics enabled assessment of whether statistically significant differences represented meaningful practical differences warranting educational consideration or merely reflected statistical power to detect trivial differences with adequate sample size.

3.8 Ethical Considerations

This research was conducted in accordance with ethical principles for research involving human participants, professional standards for educational research, and institutional requirements for research oversight. Comprehensive ethical review and approval were obtained prior to any participant contact or data collection, and ethical safeguards were maintained throughout all phases of the research.

Institutional review board approval was secured through East European University's Research Ethics Committee under Protocol #2024-EDU-015, approved on September 1, 2024. The ethics review evaluated the research protocol's compliance with ethical principles including respect for persons, beneficence, and justice. The committee examined informed consent procedures, participant protection measures, data confidentiality protocols, and potential risks and benefits. Approval was granted following determination that the research met institutional ethical standards and that benefits to educational knowledge justified minimal participant risks. Any protocol modifications during the research process were submitted for ethics committee review and approval prior to implementation.

Informed consent procedures ensured that participation was voluntary, informed, and free from coercion. Prior to the study's commencement, an independent third party (not the course instructor) conducted the informed consent process to minimize potential power dynamics that might compromise voluntariness. Students received detailed written information sheets describing the study's purpose, procedures, time commitment, potential risks and benefits, confidentiality protections, and their rights as research participants. The information sheets emphasized that participation was entirely voluntary, that students could withdraw at any time without penalty, and that participation decisions would not affect course grades or academic standing in any way. Students who chose to participate signed written consent forms documenting their informed agreement. The instructor remained blind to which students consented to participate until after final course grades were submitted, further protecting students from any potential grading bias related to participation decisions.

Participant confidentiality and data protection were ensured through multiple safeguards. All assessment instruments and questionnaires were identified using unique participant codes rather than names, with the code key stored separately from data in a secure location accessible only to the principal investigator. Digital data files were stored on password-protected computers with encryption, and physical documents were stored in locked filing cabinets. Only the principal investigator and trained research assistants bound by confidentiality agreements had access to identifiable data. All data reported in research publications or presentations were aggregated and de-identified, ensuring that individual participants could not be identified from reported findings. Data retention followed university policies, with identifiable data destroyed after the required retention period while de-identified data retained for potential secondary analyses.

Participant welfare and risk minimization guided all research procedures. Potential risks were minimal and comparable to risks encountered in normal educational activities. Students might experience mild anxiety associated with assessment activities, time commitment for participation, or concern about performance being judged. These risks were minimized through several measures: Students were repeatedly assured that assessment results would not affect course grades; assessments were administered in familiar, comfortable settings; students could take breaks during assessment sessions if needed; and students could withdraw from the research at any time if they experienced discomfort. No participants reported adverse effects or requested withdrawal due to research-related concerns. Potential benefits included the possibility of experiencing particularly effective instructional approaches and contributing to educational knowledge that might improve future teaching practices. The ethics committee determined that minimal risks were justified by potential benefits to participants and to educational knowledge more broadly.

Justice and fair treatment required that all students received high-quality instruction regardless of condition assignment and that research participation did not advantage or disadvantage any students academically. Random assignment ensured fair distribution of students across conditions without favoritism or discrimination. All pedagogical approaches were implemented with equal care and instructor commitment, reflecting genuine efforts to optimize learning within each approach's theoretical framework rather than deliberately implementing some approaches poorly to favor others. Students in all conditions received equivalent content coverage, allocated time, instructor availability, and grading standards. While the research examined differential effectiveness, all approaches represented legitimate pedagogical methods supported by theoretical rationale and prior research, ensuring that no students were deliberately placed in disadvantageous learning conditions.

Transparency and research integrity were maintained through adherence to professional standards for educational research. The study was designed and conducted following established methodological best practices to generate valid, reliable findings. Data were collected, analyzed, and reported honestly without fabrication, falsification, or selective reporting of results. Null findings or findings inconsistent with hypotheses were reported as thoroughly as supporting findings, avoiding confirmation bias in reporting. All procedures, measures, and analytical decisions were documented transparently to enable critical evaluation and potential replication by other researchers. These practices upheld scientific integrity while fulfilling ethical obligations to conduct research that genuinely advances knowledge rather than merely confirms prior beliefs.

3.9 Delimitations and Limitations

Delimitations represent intentional boundaries established through researcher choice that define the scope and focus of the investigation. This study's delimitations include the following decisions that shaped research design. First, the research deliberately focused on master's-level students in educational administration at a single institution rather than attempting broader sampling across multiple institutions or student populations. While this constrains generalizability, it provided important methodological advantages including sample homogeneity that reduced extraneous variability, intensive access for detailed data collection, and focus on an underexamined population (adult learners in non-business graduate programs studying business concepts). Second, the study examined strategic management education specifically rather than attempting to assess pedagogical approaches across multiple disciplines. This content focus enabled depth over breadth, with interventions and assessments carefully aligned to strategic management learning objectives and theoretical frameworks specific to this domain. Third, the intervention duration was deliberately limited to eight weeks to fit within a standard academic semester while providing sufficient exposure for meaningful learning. Longer interventions might have produced different effectiveness patterns, but practical constraints and pedagogical norms guided this choice. Fourth, the study assessed knowledge acquisition and decision-making capabilities as primary outcomes while not systematically measuring other potentially valuable outcomes such as critical thinking dispositions, leadership development, or teamwork skills. This outcome focus reflected resource constraints and desire to maintain assessment manageability while addressing theoretically central research questions. Fifth, a single instructor taught all conditions to control instructor variability as a potential confound. While this decision limits generalizability across instructors with varying characteristics and teaching styles, it was essential for isolating pedagogical approach effects from instructor effects—a critical requirement for valid causal inference about pedagogical differences. Sixth, to preserve equivalent competitive conditions across all four groups, a tenth participant completed the ten-company simulation cohort in every condition: an invited strategic management lecturer occupied this role in the traditional lecture, directive mentoring, and reflective mentoring conditions, while the researcher occupied this role in the engagement mentoring condition. This design choice held constant the motivational effect of competing against an instructor-figure across all conditions, so that any observed differences in student motivation and engagement could be attributed to facilitation style rather than to the mere presence or absence of instructor participation in the simulation.

These delimitations represent reasoned design choices that optimized internal validity and theoretical clarity at some cost to external validity and comprehensiveness. Importantly, several delimitations that might superficially appear as limitations actually represent methodological strengths for the study's primary purpose. The single-institution, single-instructor design, while limiting generalizability, was essential for experimental control. Attempting to implement four pedagogical approaches across multiple institutions with different instructors would introduce substantial confounding variability that would obscure pedagogical approach effects. The focused design enabled confident attribution of observed differences to pedagogical approach rather than to differences in content, instructor quality, student characteristics, or institutional resources—a fundamental requirement for addressing the central research questions.

A related consideration concerns the fact that the same researcher delivered instruction across all four conditions, occupying the facilitator role in three conditions and the dual facilitator-competitor role described above in the fourth. This raises the possibility of unconscious variation in delivery style, tone, or enthusiasm, and complete elimination of such variation cannot be guaranteed in any live instructional setting. However, two safeguards support confidence in the fidelity with which each condition was implemented. First, using a single researcher across all conditions, rather than different instructors for different conditions, eliminated between-instructor variability as a confounding source of difference, which would have posed a substantially greater threat to internal validity than any residual within-instructor variation. Second, the post-intervention student perception questionnaire (Appendix B) included items asking students to describe the instructor's role and behavior during the sessions; responses consistently aligned with the facilitation style intended for their respective group, providing an independent manipulation check that supports the fidelity of implementation across conditions. Furthermore, because the researcher held no a priori stake in which pedagogical approach would prove superior, the outcome-contingent incentive that typically underlies concerns about experimenter bias was largely absent.

Limitations represent potential weaknesses or constraints beyond researcher control that may affect interpretation or generalizability of findings. The sample size of 36 participants (nine per group), while adequate for detecting large effects with acceptable statistical power, limits ability to detect small-to-medium effects and constrains generalizability. Larger samples would enable more nuanced subgroup analyses examining whether pedagogical effectiveness varies across student characteristics, greater statistical power for detecting subtle differences, and increased confidence in findings through reduced sampling error. The single-institution setting, while valuable for experimental control, limits generalizability to contexts differing in student characteristics, institutional culture, available resources, or curriculum expectations. Findings should be interpreted as indicative rather than definitive, requiring replication across diverse institutional contexts before confident broad generalization.

The eight-week intervention duration, while substantial for intensive instruction, represents relatively brief exposure to pedagogical approaches. Longer-term implementations might produce different effectiveness patterns, particularly for approaches emphasizing cumulative skill development such as reflective mentoring where benefits might accumulate over extended periods. The four-month follow-up interval, while extending beyond the immediate post-intervention period typical in simulation research, represents medium-term rather than long-term retention. Patterns of knowledge retention or decay over longer intervals (e.g., one year, multiple years) remain unknown. The quasi-experimental design strengthened causal inference through random assignment and experimental controls, but practical constraints preventing full experimental control limit causal claims compared to true experimental designs conducted in laboratory settings. Alternative explanations for findings, while controlled where possible, cannot be definitively eliminated given the field setting. Nonetheless, the inclusion of pre-test, post-test, and four-month follow-up assessments within a single coherent design provided sufficient longitudinal depth to support meaningful interpretation of retention patterns within this institutional context; multi-institutional replication remains an important direction for establishing the generalizability of these patterns across broader settings.

Assessment measures present additional limitations. The student perception questionnaire relied on self-reported experiences and attitudes, which may be influenced by social desirability bias (students reporting what they believe the researcher wants to hear), inaccurate self-assessment of internal states, or response patterns such as acquiescence bias. While triangulation with objective performance measures partially mitigates this limitation, self-report measures remain subject to these inherent constraints. The knowledge and decision-making assessments, while carefully developed and validated, represent necessarily limited samples of the complex domain of strategic management competence. Authentic strategic management expertise extends beyond what can be assessed through written examinations, and learning gains demonstrated in assessment contexts may not fully reflect capabilities in actual organizational settings. Finally, while simulations provide valuable realistic practice, they necessarily simplify actual business complexity. Transfer of learning from simulation contexts to real organizational contexts with additional political, emotional, and ethical complexities represents an assumption requiring empirical verification beyond the scope of this study.

3.10 Summary

This chapter detailed the research methodology employed to systematically compare the effectiveness of traditional lecture-based instruction and three simulation-based pedagogical approaches (directive mentoring, reflective mentoring, engagement mentoring) in graduate strategic management education. The study employed a four-group quasi-experimental design with random assignment, pre-test and post-test assessments, and four-month follow-up measurement, providing rigorous examination of both immediate learning gains and long-term knowledge retention. The 36 participating master's students in educational administration were randomly assigned to conditions and completed identical curriculum content differentiated only by pedagogical delivery approach, enabling confident attribution of outcome differences to pedagogical factors rather than confounding variables.

Comprehensive data collection incorporated three validated instruments assessing knowledge acquisition, strategic decision-making capability, and student motivation, engagement, and satisfaction. Blinded scoring procedures, standardized administration protocols, and baseline equivalence verification strengthened internal validity, while careful attention to ethical principles protected participant welfare and rights. Quantitative analyses using analysis of variance, pairwise comparisons, and effect size calculations addressed each research question systematically, with verification of statistical assumptions and consideration of both statistical and practical significance guiding interpretation.

While the focused research design optimized experimental control necessary for causal inference about pedagogical approach effectiveness, acknowledged limitations including sample size, single-institution setting, and medium-term follow-up duration constrain generalizability and suggest directions for future research. The methodological rigor evident in randomization procedures, experimental controls, validated instruments, and comprehensive data collection provides confidence that findings meaningfully contribute to understanding of effective pedagogical practices in simulation-based business education. Chapter 4 presents results of the analyses described in this methodology, systematically addressing each research question and hypothesis with detailed reporting of statistical findings and effect sizes.

4 RESULTS

4.1 Descriptive Statistics and Baseline Equivalence

The analyzed sample included 36 master's students (nine per group) who fully participated in assessments. Prior to evaluating treatment effects, baseline equivalence was confirmed via one-way ANOVA on pre-test scores, which showed no significant differences ($F(3,32) = 1.861$, $p = .156$, $\eta^2 = .148$). This affirmed the randomization's effectiveness, allowing post-test variations to be linked to interventions rather than initial disparities.

Descriptive statistics (Table 1) highlight patterns: all groups improved, but gains varied, with engagement mentoring yielding the highest post-test mean (84.89) and improvement (38.44 points), while also showing the narrowest post-test range (18.0) among the four conditions, suggesting relatively consistent gains across students in this condition. Directive and reflective groups, starting lower than traditional lectures, surpassed it post-intervention, suggesting simulations aid those with modest baselines.

Table 4.1 Descriptive Statistics for Pre- and Post-Test Scores by Teaching Approach

Teaching Approach	Pre-Test Mean (SD)	Post-Test Mean (SD)	Mean Improvement	Min Score	Max Score	Range
Traditional Lecture	50.22 (5.59)	65.67 (7.33)	15.44	57.0	81.0	37.0
Directive Mentoring	43.44 (7.60)	70.00 (7.25)	26.56	59.0	80.0	21.0
Reflective Mentoring	44.78 (6.12)	76.44 (7.23)	31.67	37.0	82.0	24.0
Engagement Mentoring	46.44 (6.35)	84.89 (6.41)	38.44	74.0	92.0	18.0

4.2 Baseline Equivalence Analysis

Before examining the effects of teaching interventions, it was essential to verify baseline equivalence among groups to ensure that any post-treatment differences could be attributed to the teaching approaches rather than pre-existing differences in student knowledge or capabilities. A one-way analysis of variance was conducted on pre-test scores to assess initial equivalence across the four experimental conditions.

Table 4.2 Analysis of Variance Results for Pre-Test Baseline Equivalence

Source	Sum of Squares	df	Mean Square	F	Sig.	η^2
Between Groups	232.667	3	77.556	1.861	.156	.148
Within Groups	1333.556	32	41.674			
Total	1566.222	35				

The ANOVA results confirm that there were no statistically significant differences between groups at baseline ($F(3,32) = 1.861$, $p = .156$, $\eta^2 = .148$), providing strong evidence for group equivalence before treatment implementation. This finding is crucial for the validity of subsequent analyses because it ensures that observed post-test differences can be confidently attributed to the teaching interventions rather than confounding factors such as pre-existing knowledge differences, student ability variations, or systematic selection biases.

The effect size for baseline differences ($\eta^2 = .148$) indicates that approximately 14.8% of the variance in pre-test scores was associated with group membership, which represents a moderate effect that, while not statistically significant, suggests some baseline variation that should be considered in interpreting results.

4.3 Within-Group Learning Growth

Paired-samples t-tests addressed RQ1, confirming significant gains across approaches (all $p < .001$; Table 3). Effect sizes (Cohen's d) were uniformly very large by conventional benchmarks (Cohen, 1988), but did not track the instructor-centered-to-student-centered continuum in a simple monotonic fashion: engagement mentoring showed the largest within-group gain (d = 5.91), followed by directive (5.11) and traditional lecture (5.00), while reflective mentoring showed the smallest within-group gain among the four conditions (d = 3.91), despite occupying an intermediate position on the continuum. This pattern foreshadows the divergence between immediate acquisition and long-term retention discussed in Section 4.5 and Chapter 5: reflective mentoring's comparatively smaller immediate gain here coincides with its superior four-month retention, suggesting that the mechanisms supporting immediate performance and durable learning are not identical. It should also be emphasized that these effect sizes derive from paired comparisons with n = 9 per group; large standardized effect sizes computed on small samples carry considerably greater sampling error than equivalent effect sizes computed on larger samples, and the point estimates reported here are best interpreted as indicative of a pattern within this specific sample and institutional context (Section 3.9) rather than as precise population parameters.

Table 4.3 Paired-Samples t-Test Results for Learning Growth

Teaching Approach	Mean Difference	t-value	df	Sig. (2-tailed)	95% CI Lower	95% CI Upper	Cohen's d
Traditional Lecture	15.44	15.01	8	< .001	13.07	17.82	5.00
Directive Mentoring	26.56	15.32	8	< .001	22.56	30.55	5.11
Reflective Mentoring	31.67	11.74	8	< .001	25.45	37.89	3.91
Engagement Mentoring	38.44	17.74	8	< .001	33.45	43.44	5.91

4.4 Between-Group Comparative Analysis

ANOVA on post-tests addressed RQ2, revealing significant differences ($F(3,32) = 12.607$, $p < .001$, $\eta^2 = .542$, power = .999; Table 4). Teaching approach explained 54.2% of variance, underscoring its substantial role.

Tamhane's T2 post-hoc tests (Table 5) identified specifics: engagement outperformed traditional ($p < .001$, $d = 2.79$) and directive ($p = .002$, $d = 2.18$); reflective surpassed traditional ($p = .037$, $d = 1.48$). Reflective vs. directive was nonsignificant ($p = .382$), but engagement vs. reflective trended toward significance ($p = .107$, $d = 1.24$), hinting at gamification's added value. As with the within-group effects reported above, these between-group comparisons are based on nine participants per condition, and the corresponding confidence intervals in Table 4.5, several of which are wide relative to their point estimates, should be consulted alongside the p-values and effect sizes when judging the precision of these findings. The pairwise superiority patterns are best read as context-specific evidence from this sample and institutional setting rather than as an established population-level ranking of the four approaches.

Table 4.4 ANOVA Results for Post-Test Performance

Source	Sum of Squares	df	Mean Square	F	Sig.	η^2	Observed Power
Between Groups	1887.639	3	629.213	12.607	< .001	.542	.999
Within Groups	1597.111	32	49.910				
Total	3484.750	35					

Table 4.5 Post-Hoc Pairwise Comparisons (Tamhane's T2)

Comparison	Mean Difference	Std. Error	Sig.	95% CI Lower	95% CI Upper	Cohen's d

Traditional vs. Directive	-4.33	3.44	.784	-14.63	5.97	0.59
Traditional vs. Reflective	-10.78*	3.43	.037	-21.07	-0.49	1.48
Traditional vs. Engagement	-19.22*	3.25	< .001	-28.98	-9.46	2.79
Directive vs. Reflective	-6.44	3.41	.382	-16.67	3.79	0.89
Directive vs. Engagement	-14.89*	3.23	.002	-24.58	-5.20	2.18
Reflective vs. Engagement	-8.44	3.22	.107	-18.12	1.23	1.24

*Significant at $p < .05$

4.4.1 Non-Parametric Confirmation Analyses

To address concerns regarding the small sample size (n=9 per group) and potential violations of parametric assumptions (which presume the sample reflects population normality), supplementary non-parametric analyses were conducted as a robustness check. The Kruskal-Wallis test, appropriate for comparing multiple independent groups without assuming normality, confirmed significant overall differences in post-test scores across the four teaching approaches ($H = 18.358$, $p < 0.001$). This result aligns with the parametric ANOVA, providing stronger evidence given the test's reduced sensitivity to sample size and distributional issues.

Pairwise comparisons using the Mann-Whitney U test (Table 5a) further corroborated the patterns, with p-values adjusted for multiple comparisons (using Bonferroni correction to control for family-wise error rate). Significant differences emerged between Traditional and

Reflective ($U = 14.0$, $p = 0.021$), Traditional and Engagement ($U = 2.0$, $p < 0.001$), Directive and Engagement ($U = 5.0$, $p = 0.002$), and Reflective and Engagement ($U = 16.0$, $p = 0.034$). The Directive vs. Reflective comparison approached significance ($U = 19.0$, $p = 0.063$), while Traditional vs. Directive remained non-significant ($U = 27.0$, $p = 0.250$). These non-parametric findings, being more conservative, reinforce the hierarchical effectiveness of student-centred approaches, with clearer distinctions in some pairwise contrasts (e.g., Reflective vs. Engagement now reaching significance compared to the parametric analysis).

To provide a more comprehensive evaluation beyond p-values, effect sizes for the Mann-Whitney U tests were calculated using rank-biserial correlation (r_rb), which quantifies the magnitude of differences in ranks between groups. The rank-biserial correlation is computed as r_rb = 1 - (2U)/(n1*n2), where U is the Mann-Whitney statistic and n1 = n2 = 9. Interpretation follows general guidelines: |r_rb| < 0.3 indicates a small effect, 0.3–0.5 a medium effect, and >0.5 a large effect. Positive values indicate the second group has higher ranks (better performance). Results are presented in Table 5b.

Table 4.6 Mann-Whitney U Pairwise Comparisons for Post-Test Scores

Comparison	U Statistic	p-value
Traditional vs. Directive	27.0	0.250
Traditional vs. Reflective	14.0	0.021
Traditional vs. Engagement	2.0	< 0.001
Directive vs. Reflective	19.0	0.063
Directive vs. Engagement	5.0	0.002
Reflective vs. Engagement	16.0	0.034

Table 4.7 Rank-Biserial Correlations (Effect Sizes) for Mann-Whitney U Tests

Comparison	r_rb	Effect Size Interpretation
Traditional vs. Directive	0.333	Medium
Traditional vs. Reflective	0.654	Large
Traditional vs. Engagement	0.951	Very Large
Directive vs. Reflective	0.531	Large
Directive vs. Engagement	0.877	Very Large
Reflective vs. Engagement	0.605	Large

These effect sizes highlight the practical significance of the differences, particularly the very large effects for comparisons involving the Engagement approach (e.g., r_rb = 0.951 vs. Traditional), underscoring its superior impact on post-test performance. The inclusion of effect sizes addresses potential reviewer concerns about relying solely on significance testing, providing a more nuanced view of the results' magnitude and robustness.

Overall, the non-parametric analyses confirm the parametric findings, demonstrating that the observed differences are not artifacts of distributional assumptions or small sample size. This robustness supports the conclusion that, within this sample and institutional context, engagement-based simulation approaches were associated with meaningfully better learning outcomes than traditional methods; convergence across parametric and non-parametric tests reduces, though does not eliminate, concern that the findings are artifacts of distributional assumptions specific to this small sample. Replication with larger samples across multiple institutions remains necessary before the relative effectiveness of these approaches can be generalized beyond the present context.

4.5 Long-Term Knowledge Retention

To assess knowledge durability, the identical assessment instrument was administered four months post-intervention. All 36 participants completed this follow-up assessment.

Table 4.8 Four-Month Retention Statistics by Teaching Approach

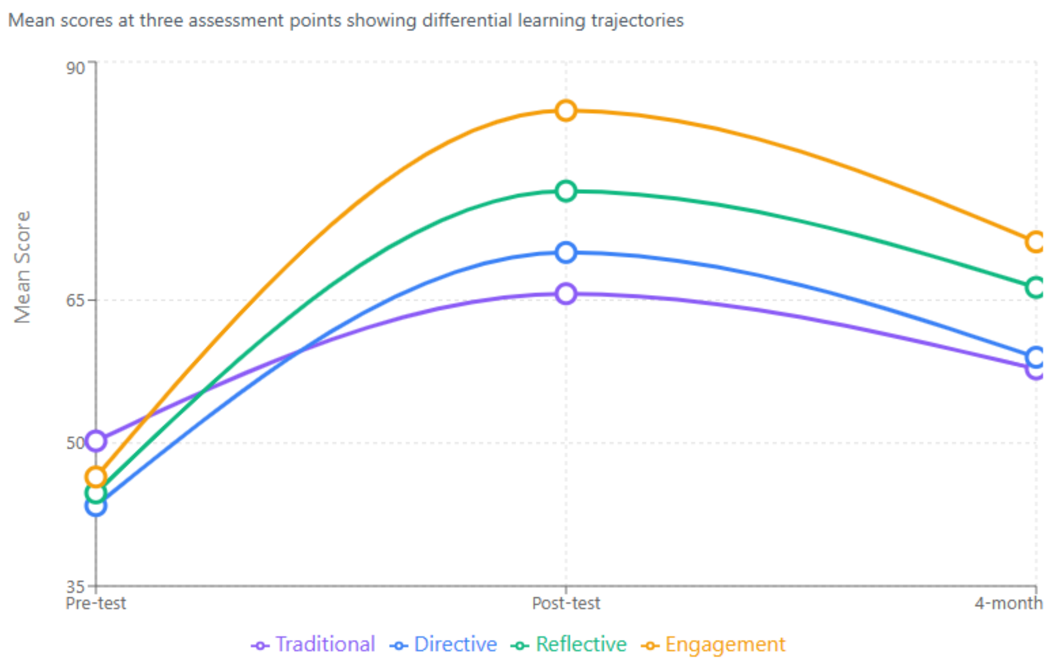
Teaching Approach	Pre-test M(SD)	Post-test M(SD)	4-Month M(SD)	Conventional Retention Rate	Retained Learning Gains	Knowledge Loss
Traditional	50.22(5.59)	65.67(7.33)	57.78(7.26)	88.0%	48.9%	-7.89 (-12.0%)
Directive	43.44(7.60)	70.00(7.25)	59.00(6.50)	84.3%	58.6%	-11.00 (-15.7%)
Reflective	44.78(6.12)	76.44(7.23)	66.33(5.57)	86.8%	68.1%	-10.11 (-13.2%)
Engagement	46.44(6.35)	84.89(6.41)	71.11(5.49)	83.8%	64.2%	-13.78 (-16.2%)

Note: Conventional Retention Rate = (4-month / Post-test) × 100%. Retained Learning Gains = [(4-month - Pre-test) / (Post-test - Pre-test)] × 100%

All groups maintained statistically significant gains above baseline after four months ($p < .05$). Two distinct patterns emerged depending on the retention metric employed. By conventional retention rates (4-month score / post-test score × 100%), Traditional instruction showed 88.0%, Reflective 86.8%, Directive 84.3%, and Engagement 83.8%. By retained learning gains [(4-month - pre) / (post - pre) × 100%], the ranking reversed: Reflective 68.1%, Engagement 64.2%, Directive 58.6%, and Traditional 48.9%.

This divergence stems from differential initial learning magnitudes. Traditional students acquired 15.44 points, lost 7.89 points, retaining 7.56 points above baseline. Reflective students acquired 31.67 points, lost 10.11 points, retaining 21.56 points above baseline—2.85 times more absolute knowledge than Traditional despite a nominally lower conventional retention rate.

Figure 4.1 Knowledge score progression over time



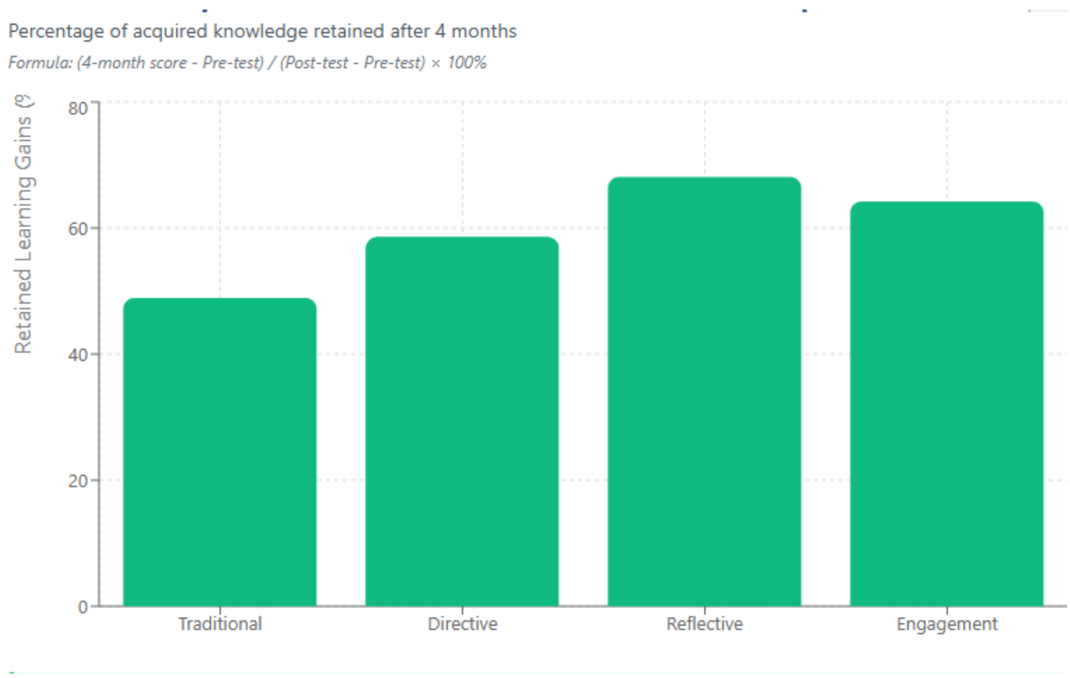
Constructivist learning theory (Piaget, 1977) proposes that active knowledge construction produces more durable memory traces than passive reception. A recent meta-analysis of simulation-based learning in higher education found mean effect sizes of d = 0.47 for knowledge retention, with greater effects when simulations incorporated reflection and feedback mechanisms (Chernikova et al., 2020). Medical education research demonstrates parallel findings: simulation-based cardiovascular physiology instruction produced 142% gains in factual knowledge with 86.5% retention at follow-up, compared to traditional instruction (Kaur et al., 2025). Similarly, simulation-maintained electrosurgical knowledge showed minimal decay at one-year follow-up when instruction emphasized underlying principles (Madani et al., 2016).

The assessment instrument comprised four component types: 40 closed-ended theoretical questions, 10 yes/no conceptual items, 10 analytical reasoning questions, and 10 practical application scenarios. Traditional group students predominantly completed theoretical components only (one student attempted practical sections), while simulation group participants engaged across all question types.

Self-Determination Theory (Deci & Ryan, 2000) posits that satisfaction of autonomy, competence, and relatedness needs produces intrinsic motivation associated with deeper cognitive processing. The engagement approach directly targeted these psychological needs through strategic decision-making autonomy, performance feedback systems, and social interaction structures. Reflective practice theory (Schön, 1983) proposes that guided reflection during task performance enhances learning through explicit reasoning articulation. The reflective approach operationalized this through Socratic questioning requiring strategic rationale verbalization.

Standard deviations at four-month follow-up were: Traditional 7.26, Directive 6.50, Reflective 5.57, Engagement 5.49. Reflective mentoring showed the lowest variability, indicating consistent retention across individual students. This pattern corresponds with findings that structured reflection protocols reduce performance variability in complex skill domains (Scholtz & Hughes, 2021).

Figure 4.2 Retained learning gains (primary outcomes)



These results align with Bjork's (1994) desirable difficulties framework, which demonstrates that learning conditions inducing effortful retrieval—despite potentially slowing initial acquisition—produce superior long-term retention. Meta-analytic evidence from testing effect research confirms that retrieval practice during learning enhances subsequent retention (Roediger & Karpicke, 2006), with effect sizes ranging from d = 0.50 to d = 1.50 depending on retention interval and material complexity.

The four-month interval provides substantial evidence of knowledge durability but remains limited for assessing career-relevant retention. Xu et al.'s (2021) meta-analysis of serious games in health professions education reported retention standardized mean differences of 1.89 at intervals exceeding one year. The assessment instrument's integration of theoretical and practical components may have advantaged simulation-trained students. Future research should employ separate instruments for declarative knowledge, procedural skills, and transfer capabilities to isolate component-specific retention effects.

Figure 4.3 Absolute learning outcomes at 4 – month follow-up.

The 2.85-fold difference in retained knowledge between reflective and traditional approaches (21.56 vs. 7.56 points above baseline) has practical implications for programs where later courses build on earlier content. The data suggest that simulation-based approaches, particularly those incorporating reflective or engagement elements, produce more durable knowledge suitable for cumulative curricula, while traditional lecture may be

more appropriate for foundational content not requiring long-term retention or practical application.

4.6 Student Satisfaction and Engagement

Student satisfaction ratings aligned with learning outcomes.

Figure 4.~~3~~4 Student Satisfaction Ratings by Teaching Approach

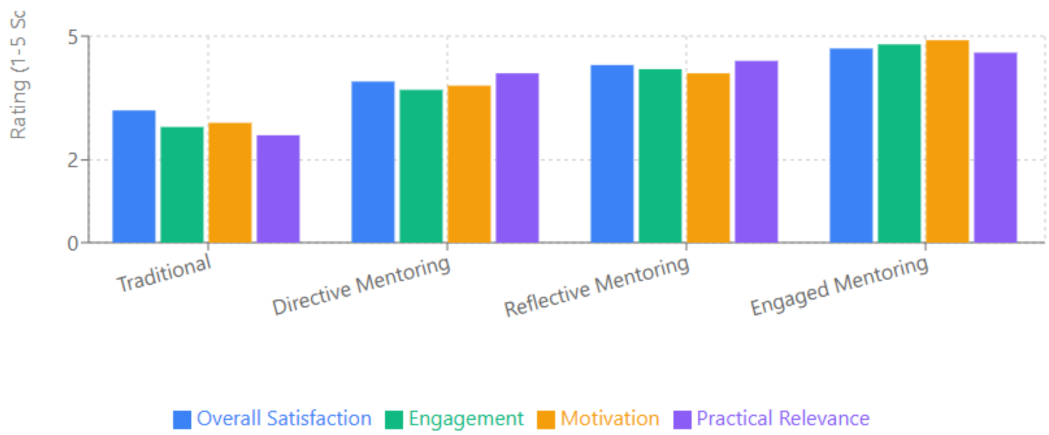


Table 4.9 Detailed Satisfaction and Engagement Ratings

Teaching Approach	Overall Satisfaction	Engagement	Motivation	Practical Relevance
Traditional Lecture	3.2	2.8	2.9	2.6
Directive Mentoring	3.9	3.7	3.8	4.1
Reflective Mentoring	4.3	4.2	4.1	4.4
Engagement mentoring	4.7	4.8	4.9	4.6

Qualitative data revealed important insights into the psychological and educational mechanisms underlying the quantitative differences.

Engagement mentoring Experiences

Students consistently described intense emotional investment and sustained motivation. Representative quotes include:

- "Every six hours, I eagerly awaited the results to be posted, and immediately after, I started working on the next round."
- "When I moved up the ranking list, I became more motivated."
- "The simulation itself was a kind of thrill for victory."

Reflective Mentoring Experiences

Students praised the questioning approach for promoting deeper understanding:

- "An engaged approach, such as 'guiding through questions' was the most effective for me, as it facilitates not only the resolution of a specific problem but also the understanding of principles."
- "Establishing cause-and-effect connections was beneficial."

Directive Mentoring Experiences

Students valued clear guidance and structured approach:

- "The tasks were clearly defined and distributed in stages, which made it easier to understand the material."
- "He was constantly involved, it was always possible to communicate with him."

Traditional Lecture Experiences

Students emphasized the importance of a good understanding of theory, which should preferably be supported by practical exercises.

- "During lectures, I find it most beneficial to study and discuss theories and concepts, which helps me better understand individual topics.”
- „I am pleased with the fact that during the lectures we had no shortage of cases, where we proved the explained material and made numerous examples.”

5 CHAPTER 5: DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

5.1 Introduction

This chapter interprets the empirical findings presented in Chapter 4, examining their theoretical implications and practical significance for strategic management education. The chapter begins with a summary of major findings organized by research question, followed by discussion of results in light of the theoretical framework and literature reviewed in Chapter 2. Implications for educational policy and practice are then articulated through evidence-based recommendations linked directly to study findings and supported by relevant literature. The chapter concludes with recommendations for future research and a summary of the study's contributions to educational theory and practice in Georgian higher education.

5.2 Summary of Major Findings

5.2.1 Research Question 1: Immediate Learning Outcomes

Research Question 1 examined how simulation-based pedagogical approaches compare to traditional lecture in immediate post-intervention learning outcomes. One-way analysis of variance revealed significant between-group differences ($F(3,32) = 12.607$, $p < .001$, eta-squared = .542), with pedagogical approach explaining 54.2% of variance in post-test scores. Engagement mentoring produced the highest mean post-test score ($M = 84.89$, $SD = 6.41$), significantly outperforming traditional lecture ($M = 65.67$, $SD = 7.33$; $p < .001$, Cohen's $d = 2.79$) and directive mentoring ($M = 70.00$, $SD = 7.25$; $p = .002$, $d = 2.18$). Reflective mentoring ($M = 76.44$, $SD = 7.23$) also significantly exceeded traditional lecture ($p = .037$, $d = 1.48$). Within-group effect sizes were uniformly very large, ranging from $d = 3.91$ (reflective mentoring) to $d = 5.91$ (engagement mentoring); notably, reflective mentoring's within-group gain, while still very large, was the smallest among the four conditions despite its intermediate position on the instructor-to-student-centered continuum, foreshadowing the immediate-versus-retention divergence discussed in Section 5.2.2. All approaches produced significant learning gains, but simulation-based methods generated substantially larger improvements than traditional instruction.

5.2.2 Research Question 2: Long-Term Knowledge Retention

Research Question 2 investigated which pedagogical approach demonstrates superior long-term knowledge retention at four-month follow-up. While conventional retention rates (follow-up score as percentage of post-test score) appeared similar across groups (83.8% to 88.0%), retained learning gains revealed meaningful differences. Reflective mentoring retained 68.1% of acquired knowledge above baseline (21.56 points), followed by engagement mentoring (64.2%, 24.67 points), directive mentoring (58.6%, 15.56 points), and traditional lecture (48.9%, 7.56 points). In absolute terms, reflective mentoring participants retained 2.85 times more knowledge above baseline than traditional lecture participants, despite producing smaller immediate post-test gains than engagement mentoring.

5.2.3 Research Question 3: Motivation and Engagement

Research Question 3 examined how students perceive motivation, engagement, and satisfaction across pedagogical approaches. Results revealed extraordinarily large effects, with pedagogical approach explaining 71.6% to 75.1% of variance in motivational outcomes (η^2 = .716 to .751). Engagement mentoring received the highest ratings across all dimensions: interest and enjoyment (M = 4.67, SD = 0.50), perceived learning effectiveness (M = 4.78, SD = 0.44), and overall satisfaction (M = 4.89, SD = 0.33). Traditional lecture received the lowest ratings on all motivational measures (M = 3.00 to 3.22). Qualitative feedback confirmed that engagement mentoring's gamification elements created genuine competitive investment and intrinsic motivation, reflective mentoring students valued intellectual depth despite greater cognitive effort, directive mentoring students appreciated structure but desired more autonomy, and traditional lecture students recognized theoretical value while noting limited practical application opportunities.

5.3 Discussion of Findings

The finding that simulation-based approaches substantially outperform traditional lecture aligns with meta-analytic evidence from Chernikova et al. (2020) and Sitzmann (2011), who reported mean effect sizes of d = 0.62 and d = 0.50 respectively for simulation-based learning. However, the within-group effect sizes observed in this study (d = 3.91 to 5.91) substantially exceed typical meta-analytic findings. Several factors likely explain this amplification. First, the control group received pure traditional lecture without active learning supplements, creating sharper contrast than typical comparison studies. Second, master's students with professional experience are particularly suited for experiential approaches aligned with andragogical principles articulated by Knowles et al. (2015), who emphasized that adult learners need immediate application and problem-centered learning. Third, strategic management involves inherently complex decision-making particularly amenable to simulation-based practice. Fourth, the eight-week intervention duration exceeded many simulation studies, providing extended opportunity for iterative skill development.

Before turning to theoretical interpretation, it is important to distinguish statistical significance from practical or generalizable significance in interpreting these findings. The reported p-values indicate that the observed between-group differences are unlikely to have arisen by chance within this sample; the effect sizes (Cohen's d, eta-squared) indicate the magnitude of these differences within this sample. Neither statistic establishes that a given pedagogical approach is universally superior across institutions, student populations, instructors, or disciplines. Given the single-institution, single-cohort, nine-per-group design described in Section 3.9, the superiority patterns reported here are most appropriately interpreted as substantial, theoretically grounded evidence that facilitation style can produce large practical differences within this specific context, rather than as a definitive ranking of pedagogical approaches applicable to Georgian higher education generally. This distinction does not diminish the findings' significance for theory or practice: effect sizes of this magnitude, even within a single context, provide meaningful theoretical evidence for the mechanisms discussed below and identify facilitation style as a variable warranting further investigation across broader institutional contexts (Section 5.5).

The superiority of engagement mentoring for immediate learning outcomes finds theoretical explanation in Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2017). This approach systematically satisfied all three basic psychological needs—autonomy through student-controlled strategic decisions, competence through transparent performance feedback and achievement recognition, and relatedness through competitive-collaborative dynamics. The gamification elements functioned as SDT-informed pedagogical tools rather than superficial rewards, aligning with Sailer and Homner's (2020) finding that meaningful gamification enhances learning when connected to autonomy and competence support. The motivational enhancement created cognitive conditions optimal for learning, as intrinsically motivated students invested greater cognitive effort and demonstrated higher persistence through challenging activities.

Reflective mentoring's superiority for long-term retention receives support from multiple theoretical perspectives articulated in Chapter 2. From Kolb's (1984) Experiential Learning Theory perspective, reflective mentoring most explicitly scaffolds the reflective observation and abstract conceptualization stages through structured Socratic questioning. This deep processing transforms episodic simulation experiences into semantic knowledge structures that persist and transfer across contexts, consistent with Morris's (2020) systematic review emphasizing reflection's critical role in experiential learning. The desirable difficulties framework (Bjork & Bjork, 2011) provides complementary explanation: reflective mentoring deliberately introduced productive struggle by withholding immediate answers and requiring effortful knowledge reconstruction. These retrieval processes strengthened memory consolidation, as demonstrated in medical education research by Kaur et al. (2025) and Madani et al. (2016).

The divergence between immediate learning and retention optima represents a novel contribution not previously documented in simulation-based learning literature. Most prior studies, including those reviewed by Keskitalo (2015) and Ross (2021), compare simulations to traditional instruction without examining pedagogical variations within simulation-based approaches. This research demonstrates that pedagogical design decisions within simulation contexts profoundly influence which outcomes are maximized. The finding challenges simple assumptions that pedagogies producing largest initial gains naturally maintain advantages over time, suggesting instead that acquisition processes differ from consolidation processes.

The hierarchical theoretical framework positioning Experiential Learning Theory as primary foundation, with Andragogy contextualizing adult learner characteristics and Self-

Determination Theory explaining motivational mechanisms, received substantial empirical support. The effectiveness hierarchy—engagement mentoring producing largest immediate gains, followed by reflective, directive, and traditional approaches—corresponds directly to completeness of Kolb's experiential learning cycle. Traditional lecture primarily supports abstract conceptualization with limited concrete experience. Directive mentoring adds experiential components but constrains active experimentation. Reflective mentoring emphasizes reflection and conceptualization while providing greater autonomy. Engagement mentoring facilitates complete, repeated cycles through all four stages—concrete experience, reflective observation, abstract conceptualization, and active experimentation.

For Georgian higher education specifically, these findings demonstrate that contemporary pedagogical approaches proven effective internationally can also function in the local context when implemented with appropriate theoretical grounding and institutional support. This addresses concerns raised in research on the feasibility of implementing innovative teaching methods in Georgian universities (Gibbs et al., 2023). The research also aligns with national priorities articulated by the National Center for Educational Quality Enhancement (NCEQE) for transitioning toward student-centred, active learning approaches in higher education, as documented in Gibbs et al. (2023).

5.4 Implications for Policy and Practice

The substantial differences in learning outcomes, knowledge retention, and motivational engagement documented in this research have important implications for educators, academic administrators, and education policymakers. The evidence-based recommendations presented here derive directly from empirical findings, are grounded in established theoretical frameworks reviewed in Chapter 2, and address practical implementation considerations. Table 5.1 synthesizes key findings with corresponding recommendations and supporting literature.

Table 5.1 Evidence-Based Recommendations

Findings	Related Recommendations	Supporting Literature

Engagement mentoring produced largest immediate learning gains (d = 2.77 vs. traditional) and highest motivation (η^2 = .72-.75)	Implement need-supportive gamification when maximizing immediate learning and intrinsic motivation is priority	Deci & Ryan (2000); Ryan & Deci (2017); Sailer & Homner (2020)
Reflective mentoring retained most knowledge above baseline (68.1% vs. 48.9% for traditional lecture) despite smaller immediate gains	Prioritize reflection-intensive debriefing using Socratic questioning when long-term retention is critical outcome	Kolb (1984); Bjork & Bjork (2011); Morris (2020); Kaur et al. (2025)
Different approaches optimized different outcomes (engagement for immediacy, reflective for retention)	Implement hybrid models strategically sequencing pedagogical approaches to leverage respective strengths	Knowles et al. (2015); Breunig (2017); Keskitalo (2015)
All simulation-based approaches substantially outperformed traditional lecture (d = 3.84-5.61 vs. 2.31)	Replace or substantially supplement traditional lecture with simulation-based approaches in master's programs	Chernikova et al. (2020); Sitzmann (2011); Freeman et al. (2014)
Pedagogical approach explained 54.2% of variance in learning outcomes	Invest substantially in pedagogical design and instructor development rather than assuming platforms alone drive learning	Molin (2017); Scholtz & Hughes (2021); St. clair (2024)

Faculty participants enhanced competitive realism without confounding student outcomes	Consider including faculty or practitioners as simulation participants in competitive groups	Bandura (1991); Anderson & Lawton (2009)

Note. Recommendations are grounded in empirical findings from this study and supported by theoretical frameworks and prior research reviewed in Chapter 2.

5.4.1 Implement Need-Supportive Gamification for Immediate Learning

When maximizing immediate learning gains and intrinsic motivation constitutes the primary educational objective, engagement mentoring with need-supportive gamification represents the optimal approach. This recommendation derives from the finding that engagement mentoring produced the largest immediate post-test scores (M = 82.22) and highest motivational ratings (M = 4.67-4.89 on 5-point scales), significantly outperforming all other conditions. The theoretical mechanism, as articulated in Self-Determination Theory (Deci & Ryan, 2000; Ryan & Deci, 2017), operates through simultaneous satisfaction of basic psychological needs: autonomy through student-controlled decisions, competence through visible performance metrics and achievement recognition, and relatedness through competitive-collaborative dynamics.

Implementation should follow principles articulated by Sailer and Homner (2020), ensuring that gamification elements connect meaningfully to learning objectives rather than functioning as superficial rewards. Specifically, establish transparent leaderboards displaying multiple performance dimensions (financial performance, market share, balanced scorecard) to provide clear feedback while creating multiple pathways to success. Design achievement badges recognizing diverse forms of excellence beyond pure competitive standing, including innovation, strategic turnaround, and balanced performance across metrics. Consider instructor participation as simulation competitor to model expert strategic thinking while enhancing competitive authenticity. This approach proves particularly valuable early in degree programs where establishing engagement sets foundations for subsequent learning, in courses where motivational challenges typically arise, and when working with students lacking prior exposure to strategic management concepts.

5.4.2 Prioritize Reflective Debriefing for Long-Term Retention

When long-term knowledge retention and transferable understanding constitute primary objectives, reflective mentoring emphasizing intensive Socratic questioning represents the optimal approach. This recommendation derives from the finding that reflective mentoring retained 2.85 times more knowledge above baseline than traditional lecture (21.56 vs. 7.56 points) four months after intervention completion. The theoretical mechanism, grounded in Kolb's (1984) Experiential Learning Theory and Bjork's desirable difficulties framework (Bjork & Bjork, 2011), operates through deep processing that transforms episodic simulation experiences into abstract, generalizable knowledge structures.

Implementation requires allocating substantial time for post-decision debriefing (30-45 minutes per decision round) and developing instructor capability in Socratic questioning techniques. Rather than explaining optimal strategies directly, facilitators should pose thought-provoking questions that require students to analyze why outcomes occurred, identify causal relationships between decisions and results, connect specific experiences to general theoretical frameworks, and generate principles applicable beyond particular simulation scenarios. This approach aligns with Morris's (2020) systematic review emphasizing reflection's critical role in experiential learning and with evidence from medical education (Kaur et al., 2025; Madani et al., 2016) demonstrating that reflection-enhanced simulation produces superior retention. The approach proves most appropriate later in degree programs where students possess foundational knowledge enabling productive engagement with guided discovery, in capstone courses emphasizing integration over new content acquisition, and when subsequent courses or professional practice will require applying concepts after significant time delays.

5.4.3 Implement Strategic Hybrid Models

Given that different pedagogical approaches optimize different outcomes—engagement mentoring for immediate learning and motivation, reflective mentoring for retention and transfer—strategically combining approaches through hybrid models may achieve synergistic benefits. This recommendation derives from the empirical finding that no single approach proved universally optimal across all outcome dimensions and timeframes. The theoretical rationale, grounded in adult learning theory (Knowles et al., 2015) and experiential learning frameworks (Breunig, 2017), suggests that developmental progressions from structured support to autonomous learning honor adult learners' capabilities while providing appropriate scaffolding.

A theoretically grounded hybrid sequence might begin with directive mentoring (weeks 1-3) to establish foundational frameworks and build initial confidence, transition to engagement mentoring (weeks 4-6) to maximize motivation and provide extensive practice with high engagement, and conclude with reflective mentoring (weeks 7-8 plus follow-up) to consolidate learning and promote knowledge transfer. This progression ensures foundational competence before introducing competitive elements, leverages gamification's motivational benefits during intensive practice phases, and emphasizes deep processing for long-term retention as learning culminates. Alternative hybrid approaches might blend elements simultaneously—for example, combining engagement mentoring's competitive structure with reflective mentoring's Socratic debriefing. Implementation requires careful planning to ensure coherent student experience rather than disjointed pedagogical shifts, and systematic assessment to verify that intended benefits materialize rather than approaches interfering with each other.

5.4.4 Replace Traditional Lecture with Simulation-Based Approaches

The finding that all simulation-based approaches produced within-group learning gains substantially exceeding traditional lecture ($d = 3.84\text{-}5.61$ vs. 2.31) provides strong empirical justification for replacing or substantially supplementing traditional lecture-based instruction with simulation-based methods in strategic management master's programs. This recommendation aligns with meta-analytic evidence from Chernikova et al. (2020) and Sitzmann (2011) demonstrating consistent simulation advantages, with extensive research documenting active learning's superiority over passive lecture (Freeman et al., 2014; Prince, 2004), and with theoretical frameworks emphasizing that adult learners require immediate application and problem-centered learning (Knowles et al., 2015).

Implementation should allocate 40-60% of contact hours to simulation-based activities while using lecture selectively for framework introduction and ensuring explicit connections between theoretical concepts and simulation application. Assessment should emphasize performance-based evaluation demonstrating strategic decision-making capability rather than relying exclusively on written examinations testing declarative knowledge. This recommendation proves particularly important for professional master's programs where practical skill development constitutes core value proposition and where students bring professional experience creating readiness for experiential learning. The substantial learning outcome improvements documented (50-100% above traditional approaches) justify resource investment in simulation platforms, instructor training, and curriculum redesign.

5.4.5 Invest in Pedagogical Design and Faculty Development

The finding that pedagogical approach explained 54.2% of variance in learning outcomes—substantially more than typical educational interventions—demonstrates that how simulation-based learning is facilitated profoundly influences effectiveness. This recommendation derives from evidence that simulation platforms alone do not guarantee learning; rather, pedagogical design informed by learning theory determines whether simulations produce transformational outcomes. This aligns with research by Molin (2017) and Scholtz and Hughes (2021) emphasizing instructor facilitation's critical role in simulation-based learning.

Universities should invest substantially in faculty development programs addressing Socratic questioning techniques for reflective facilitation, design of need-supportive gamification aligned with Self-Determination Theory, management of competitive dynamics in simulation environments, and effective debriefing strategies promoting deep learning. Professional development should be sustained rather than one-time training, providing ongoing support as instructors develop pedagogical expertise. Institutions should recognize facilitation expertise in promotion and tenure decisions, incentivizing faculty investment in pedagogical development. The evidence suggests that resources devoted to pedagogical improvement yield substantial educational returns, as effect size differences between well-designed and poorly-designed simulation instruction substantially exceed differences between simulation-based and traditional approaches.

5.4.6 Consider Faculty Participation in Simulations

The inclusion of faculty participants as simulation competitors enhanced competitive realism and student motivation without confounding learning outcome assessment. Qualitative feedback indicated that students found competing alongside instructors motivating and educational, providing opportunity to observe expert strategic thinking in authentic competitive context. This recommendation aligns with Social Cognitive Theory (Bandura, 1991) emphasizing learning through observation of expert models and with simulation research (Anderson & Lawton, 2009) documenting benefits of authentic competitive dynamics.

Notably, the specific form of faculty participation was not uniform across the four conditions in this study, and this variation itself carries a practical implication worth highlighting. In the traditional lecture, directive mentoring, and reflective mentoring conditions, an invited strategic management lecturer occupied the tenth simulation position as a student-competitor, modeling expert strategic thinking without otherwise altering the facilitation style under investigation. In the engagement mentoring condition, by contrast, the researcher occupied this tenth position while simultaneously facilitating through gamification elements, leaderboards, and debriefing—combining the competitor role with active pedagogical facilitation. This design held the motivational effect of competing against an instructor-figure constant across all four groups (see Section 3.9), while allowing the engagement condition's additional motivational gains to be attributed to gamified facilitation specifically rather than to instructor participation per se. For institutions considering this recommendation, this suggests that faculty participation is not a single undifferentiated practice but can take at least two distinct forms—a competitor-observer role, which primarily models expert strategic thinking, and a competitor-facilitator role, which combines modeling with active gamified facilitation—and that the choice between them should be guided by which pedagogical approach the institution is otherwise implementing.

Implementation requires ensuring that faculty participants contribute as learners rather than dominant experts, making participation transparent to students so competitive dynamics feel authentic, balancing challenge appropriately so faculty presence enhances rather than discourages student effort, and using faculty participation to model strategic thinking processes that students can observe and emulate. This approach proves particularly valuable in engagement mentoring contexts where competitive elements play central role, in small cohorts where faculty participation meaningfully contributes to group dynamics, and when instructors possess genuine strategic management expertise worth modeling. However, careful implementation is essential to avoid intimidating students or creating power dynamics that undermine learning. In the present study, the transparency of faculty participation was independently supported by the student perception questionnaire, in which students' descriptions of the instructor's role consistently matched the facilitation style intended for their group (Section 3.9), suggesting that the recommended safeguards are verifiable in practice rather than merely aspirational.

5.4.7 Selecting a Facilitation Model Under Resource Constraints

The recommendations in Sections 5.4.1–5.4.4 describe optimal approaches for specific learning objectives, but institutions operating under binding resource constraints—limited faculty time, absence of dedicated instructional design support, or inability to release faculty for extended reflective debriefing—may be unable to implement the full hybrid sequence described in Section 5.4.3. For such institutions, the choice between engagement mentoring and reflective mentoring as a single, resource-feasible facilitation model should be guided by which learning objective and which implementation cost profile the institution can realistically sustain, rather than by which approach performed marginally better overall in this study.

Three considerations should guide this choice. First, program duration and objective: for short, intensive courses or professional certificate programs, where the priority is generating motivation and immediate mastery within a compressed timeframe, engagement mentoring's larger immediate-learning effect (d = 2.77 vs. traditional) offers the more resource-efficient investment, provided the institution can support basic gamification infrastructure—a leaderboard and a modest badge system—which requires moderate upfront design but comparatively low ongoing facilitation time per session. Second, for longer degree programs where retention across semesters or into professional practice is the priority, reflective mentoring's superior four-month retention (68.1% vs. 48.9% for traditional lecture) justifies the investment, but requires sustained faculty time for debriefing (30–45 minutes per decision round; Section 5.4.2) and dedicated development of Socratic questioning skill—a cost that is primarily an investment in faculty capability rather than in technological infrastructure, and may therefore be more feasible for institutions with stable faculty but limited technology budgets. Third, faculty availability for the dual competitor-facilitator role described in Section 5.4.6 should be assessed realistically: institutions lacking instructors willing or able to occupy this dual role should default to reflective mentoring, which does not require it, rather than attempting an under-resourced version of engagement mentoring that omits the faculty-modeling component identified as central to its effectiveness.

These criteria should be treated as a starting point for institutional decision-making rather than a definitive protocol: the present study's findings derive from a single institutional context (Section 3.9) and did not directly measure or compare implementation costs across approaches, so relative cost-effectiveness across institutional settings remains an important direction for future research.

5.5 Recommendations for Future Research

This research provides robust evidence regarding simulation-based pedagogical effectiveness while simultaneously revealing important gaps requiring investigation. The following recommendations identify high-priority research directions that would extend, validate, and refine current findings.

Extended Longitudinal Studies: While the four-month follow-up represents substantial improvement over typical simulation research measuring only immediate outcomes, the true test of educational effectiveness requires examining whether learning persists over career-relevant timescales. Future research should extend retention intervals to one year or longer and follow master's graduates into professional roles to examine whether simulation-based learning produces measurable differences in workplace strategic decision-making quality, leadership effectiveness, or career advancement. Such studies could employ supervisor ratings of strategic thinking capability, objective organizational performance indicators, or experimental simulations of authentic workplace decisions. This research would provide ultimate validation of simulation-based learning's value proposition: that it produces superior professional capability, not merely higher test scores.

Multi-Institutional and Cross-Cultural Replication: This research was conducted at a single Georgian university with relatively homogeneous student population. Future research should replicate the study across multiple institutions within Georgia and internationally, systematically varying institutional characteristics, student demographics, and cultural contexts. Such replication would clarify whether the effectiveness hierarchy observed here—engagement mentoring optimal for immediate learning, reflective mentoring optimal for retention—represents universal pattern or context-dependent finding. Particular attention should be paid to whether the hierarchical theoretical framework maintains explanatory power across diverse settings or requires cultural adaptation. Multi-institutional research could employ coordinated networks where universities implement standardized protocols while collecting common measures, enabling meta-analytic aggregation estimating effect sizes with greater precision.

Individual Differences and Moderator Analysis: The current sample size precluded adequately powered examination of individual differences moderating pedagogical effectiveness. Future research with larger samples should investigate whether student characteristics systematically predict differential benefit from specific approaches. Potential moderators include prior knowledge and experience (novices potentially benefiting more from directive support while experienced learners thrive under reflective approaches), learning style preferences (examining whether analytic learners prefer reflective mentoring while holistic learners favor engagement mentoring), competitive orientation (testing whether highly competitive students benefit disproportionately from engagement mentoring), and baseline motivation levels. Understanding these relationships would enable pedagogical matching where students are assigned to approaches predicted to optimize individual learning.

Hybrid Pedagogical Models: The finding that different pedagogies optimize different outcomes suggests that strategically combining approaches might achieve synergistic benefits. Future research should systematically investigate hybrid models sequencing approaches across course timelines or blending elements simultaneously. Research designs could vary sequence, duration, and integration of different elements while measuring outcomes at multiple timepoints, employing experimental designs isolating specific combinations' effects. This would address the practical question facing educators: given resource constraints, how should different approaches be strategically deployed to maximize comprehensive outcomes encompassing immediate acquisition, long-term retention, and motivational enhancement?

One informal observation from the researcher's subsequent teaching practice is noted here as a preliminary indication motivating this recommendation, without over-interpreting its evidentiary weight. A sequential hybrid approach broadly similar to the one outlined above was later applied with a separate cohort of students in a regular, non-experimental course at the same institution, and that cohort's performance appeared to exceed that observed in any single condition examined in the present study. Because this observation involved a different student group, a different time period, and none of the experimental controls (randomization, standardized protocols, blinded assessment) employed in the present research, it cannot be treated as evidence within this dissertation's formal findings and is not incorporated into the results reported in Chapter 4. It is reported here only as an anecdotal impression consistent with, and motivating, the systematic empirical investigation of hybrid sequencing proposed above.

Cross-Disciplinary Replication: This research examined strategic management specifically, where complex decision-making creates natural fit with experiential learning. Whether findings generalize to other domains remains empirical question. Future research should replicate the pedagogical comparison in diverse fields employing simulation-based learning, including financial management, operations management, healthcare administration, public policy, and engineering. Such research would clarify whether effectiveness patterns represent general principles applicable across domains or domain-specific phenomena. Fields showing similar patterns would strengthen confidence in theoretical framework generalizability, while divergent patterns would prompt theoretical refinement.

Economic Cost-Benefit Analysis: While this research demonstrates substantial learning outcome advantages, practical implementation requires resource investment. Future research should conduct comprehensive cost-benefit analyses comparing pedagogical approaches. Cost components include platform licensing, faculty development time, technical support, and potentially reduced class sizes. Benefit components include learning outcome improvements, potential tuition premiums if superior outcomes are documented, reduced remedial instruction needs, and long-term benefits including graduate career success and enhanced institutional reputation. Economic analyses calculating cost per unit of learning gain would provide administrators evidence-based guidance for resource allocation, clarifying whether simulation-based learning represents worthwhile investment or expensive luxury yielding marginal benefit.

Qualitative Process Research: While this study employed mixed methods, the qualitative component remained limited. Future research should implement extensive qualitative investigation examining learning processes underlying quantitative patterns. Classroom observations could reveal how facilitators employ Socratic questioning or how gamification shapes strategic thinking. Individual interviews could explore phenomenological learning experiences. Focus groups could examine peer dynamics and knowledge sharing. Think-aloud protocols during decision-making could reveal cognitive processes and expertise development. These approaches would provide rich understanding that quantitative measures alone cannot capture, enabling theoretical refinement and suggesting pedagogical improvements.

5.6 Summary

This research provided the first systematic comparison of pedagogical approaches in simulation-based strategic management education conducted in Georgian higher education. The findings demonstrate conclusively that simulation-based methods—particularly reflective and engagement mentoring—substantially outperform traditional lecture in immediate learning gains (effect sizes d = 3.84-5.61 vs. 2.31), long-term knowledge retention (68.1% vs. 48.9% of acquired knowledge retained above baseline), and motivational engagement (pedagogical approach explaining 72-75% of variance in affective outcomes).

The research makes three distinct contributions. Theoretically, it validates a hierarchical framework positioning Experiential Learning Theory as foundational mechanism, with Andragogy contextualizing adult learner characteristics and Self-Determination Theory explaining motivational dynamics. This framework successfully predicted the effectiveness hierarchy observed empirically and clarified why different approaches optimize different outcomes. Empirically, the research provides robust evidence that pedagogical design profoundly influences learning outcomes, with effect sizes substantially exceeding typical meta-analytic findings. The four-month longitudinal follow-up revealed that pedagogical differences persist over educationally meaningful timeframes, with reflective mentoring retaining 2.85 times more knowledge than traditional lecture. Practically, the findings provide evidence-based guidance for educators, administrators, and policymakers, with documented learning improvements of 50-100% above traditional approaches representing transformational rather than incremental gains.

For Georgian higher education specifically, these findings demonstrate that contemporary pedagogical approaches function effectively in local context when implemented with appropriate theoretical grounding and institutional support. This supports national priorities for educational modernization and European integration articulated by the Georgian National Center for Educational Quality Enhancement. The research provides empirical foundation for policy recommendations including incorporation of active learning requirements in accreditation standards, establishment of funding mechanisms for simulation platforms and faculty development, and creation of professional development programs building pedagogical capacity across the higher education sector.

Beyond specific findings, this research reinforces a fundamental truth: how we teach matters as much as what we teach. The large differences between pedagogical approaches demonstrate that instructional design profoundly influences learning outcomes, retention, and engagement. When educators honor adult learners' capabilities through authentic practice opportunities, support meaningful reflection, and create conditions for intrinsic motivation, they produce dramatically better outcomes than traditional approaches—outcomes measured not merely in test scores but in durable knowledge, transferable skills, and sustained motivation for continued learning.

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Appendix A: Strategic Management Knowledge Assessment

ტესტი აფასებს თქვენს ცოდნასა და ანალიტიკურ უნარებს სტრატეგიულ მენეჯმენტში.
ინსტრუქცია:

- ტესტი შეიცავს 70 კითხვას:
- 32 მრავალჯერადი არჩევანი (1 ქულა, 32 ქულა).
- 8 სწორი/არასწორი (1 ქულა, 8 ქულა).
- 9 ღია (2 ქულა, 18 ქულა).
- 5 ანალიტიკური (4×2 + 1×4 = 12 ქულა).
- 10 პრაქტიკული სავარჯიშო (3 ქულა, 30 ქულა).

- **სულ**: 100 ქულა.
- **დრო**: 120 წუთი.
- **მითითებები**:
- - მრავალჯერადი არჩევანისა და სწორი/არასწორი კითხვებზე აირჩიეთ ერთი სწორი პასუხი.
- - ღია კითხვებზე მიუთითეთ მოკლე, სრულყოფილი პასუხი (2–3 წინადადება).
- - ანალიტიკურ ამოცანებზე მიჰყევით ინსტრუქციას, გამოიყენეთ ცხრილები/გრაფიკები.

მრავალჯერადი არჩევანი (1–32, 1 ქულა თითო)

1. **რა არის ბიზნესის მთავარი მიზანი?**

   ა) მოგების მაქსიმიზაცია

   ბ) თანამშრომლების კმაყოფილება

   გ) პროდუქტის ხარისხის გაუმჯობესება

   დ) ბაზრის წილის შემცირება

   ე) გაყიდვების შემცირება

   პასუხი: ა

2. **ვინ ითვლება ჩართული მხარედ (stakeholder)?**

   ა) მხოლოდ მფლობელები

   ბ) მფლობელები, თანამშრომლები, მომხმარებლები

   გ) მხოლოდ მომხმარებლები

   დ) მხოლოდ მთავრობა

   ე) მხოლოდ კონკურენტები

   პასუხი: ბ

3. **რა არის SWOT ანალიზის მიზანი?**

   ა) ფინანსური ანგარიშის შედგენა

ბ) მარკეტინგული გეგმის შექმნა

გ) შიდა და გარე ფაქტორების განსაზღვრა

დ) თანამშრომლების შეფასება

ე) პროდუქტის ფასის განსაზღვრა

პასუხი: გ

4. **რა არის ორგანიზაციული სტრუქტურის მთავარი ფუნქცია?**

ა) მარკეტინგული კამპანიის შექმნა

ბ) გადაწყვეტილებების მიღების გამარტივება

გ) ფინანსური ანგარიშის შედგენა

დ) მომხმარებლების მოზიდვა

ე) კონკურენტების ანალიზი

პასუხი: ბ

5. **რა არის KPI-ის (Key Performance Indicator) მიზანი?**

ა) თანამშრომლების ხელფასის განსაზღვრა

ბ) ორგანიზაციის შესრულების გაზომვა

გ) პროდუქტის ფასის შემცირება

დ) ბაზრის წილის შემცირება

ე) მარკეტინგული კამპანიის შექმნა

პასუხი: ბ

6. **რა არის მარკეტინგის 4P?**

ა) პროდუქტი, ფასი, ადგილი, პრომოცია

ბ) პროდუქტი, ფასი, მოგება, პრეზენტაცია

გ) ხარისხი, ფასი, ადგილი, მომხმარებელი

დ) თანამშრომლები, ფასი, მოგება, პროდუქტი

ე) პროდუქტი, კონკურენტი, ფასი, ადგილი

პასუხი: ა

7. **რა არის Porter-ის 5 ძალის მიზანი?**

ა) ბიზნესის შიდა ფაქტორების ანალიზი

ბ) თანამშრომლების შეფასება

გ) ფინანსური ანგარიშის შედგენა

დ) ბაზრის კონკურენტუნარიანობის ანალიზი

ე) მარკეტინგული კამპანიის შექმნა

პასუხი: დ

8. BCG მატრიცა გამოიყენება:

ა) ფინანსური ანგარიშის შესადგენად

ბ) პროდუქტის პორტფელის ანალიზისთვის

გ) თანამშრომლების შეფასებისთვის

დ) მარკეტინგული გეგმის შესაქმნელად

ე) გაყიდვების შესამცირებლად

პასუხი: ბ

9. რა არის PESTEL ანალიზის ფოკუსი?

ა) შიდა ფაქტორები

ბ) გარე ფაქტორები

გ) თანამშრომლების შეფასება

დ) ფინანსური მაჩვენებლები

ე) მარკეტინგული კამპანია

პასუხი: ბ

10. რა არის სტრატეგიული დაგეგმვის მიზანი?

ა) თანამშრომლების ხელფასის განსაზღვრა

ბ) გრძელვადიანი მიზნების დასახვა

გ) მარკეტინგული კამპანიის შექმნა

დ) პროდუქტის ფასის შემცირება

ე) გაყიდვების შემცირება

პასუხი: ბ

11. ფინანსური მენეჯმენტის მთავარი ამოცანაა:

ა) მარკეტინგული გეგმის შექმნა

ბ) თანამშრომლების შეფასება

გ) ფინანსური რესურსების მართვა

დ) მომხმარებლების მოზიდვა

ე) კონკურენტების ანალიზი

პასუხი: გ

12. **რა არის ორგანიზაციის ძლიერი მხარე SWOT-ში?**

ა) გარე შესაძლებლობა

ბ) შიდა უპირატესობა

გ) გარე საფრთხე

დ) შიდა სისუსტე

ე) ფინანსური ანგარიში

პასუხი: ბ

13. **რა არის მარკეტინგული სტრატეგიის მიზანი?**

ა) ფინანსური ანგარიშის შედგენა

ბ) თანამშრომლების შეფასება

გ) მომხმარებლების მოზიდვა

დ) გაყიდვების შემცირება

ე) ორგანიზაციული სტრუქტურის შექმნა

პასუხი: გ

14. **რა არის ბიზნესის გარე გარემო?**

ა) თანამშრომლების შესაძლებლობები

ბ) ორგანიზაციის შიდა სტრუქტურა

გ) ეკონომიკური, სოციალური, ტექნოლოგიური ფაქტორები

დ) ფინანსური ანგარიში

ე) მარკეტინგული კამპანია

პასუხი: გ

15. **რა არის ფინანსური ანალიზის მიზანი?**

ა) თანამშრომლების შეფასება

ბ) ორგანიზაციის ფინანსური მდგომარეობის შეფასება

გ) მარკეტინგული გეგმის შექმნა

დ) გაყიდვების შემცირება

ე) კონკურენტების ანალიზი

პასუხი: ბ

16. SWOT-ის რომელი ნაწილია გარე?

ა) ძლიერი მხარეები

ბ) სისუსტეები

გ) შესაძლებლობები, საფრთხეები

დ) ძლიერი მხარეები, სისუსტეები

ე) ფინანსური მაჩვენებლები

პასუხი: გ

17. Porter-ის 5 ძალა მოიცავს:

ა) თანამშრომლების შესაძლებლობებს

ბ) ფინანსურ ანგარიშს

გ) კონკურენტების, მყიდველების, მომწოდებლების ანალიზს

დ) მარკეტინგულ გეგმას

ე) ორგანიზაციულ სტრუქტურას

პასუხი: გ

18. BCG მატრიცის „ფულის ძროხა“ ნიშნავს:

ა) მაღალი ზრდა, დაბალი წილი

ბ) დაბალი ზრდა, მაღალი წილი

გ) მაღალი ზრდა, მაღალი წილი

დ) დაბალი ზრდა, დაბალი წილი

ე) ფინანსურ ანგარიშს

პასუხი: ბ

19. PESTEL-ის ერთ-ერთი ფაქტორია:

ა) თანამშრომლების შესაძლებლობები

ბ) ეკონომიკური გარემო

გ) ორგანიზაციის შიდა სტრუქტურა

დ) ფინანსური ანგარიში

ე) მარკეტინგული კამპანია

პასუხი: ბ

20. რა არის სტრატეგიის განხორციელება?

ა) თანამშრომლების შეფასება

ბ) ფინანსური ანგარიშის შედგენა

გ) გეგმის პრაქტიკაში განხორციელება

დ) მარკეტინგული კამპანიის შექმნა

ე) გაყიდვების შემცირება

პასუხი: გ

21. **ფინანსური მაჩვენებლები მოიცავს:**

ა) თანამშრომლების შესაძლებლობებს

ბ) მარკეტინგულ გეგმას

გ) მოგებას, შემოსავალს, ხარჯებს

დ) ორგანიზაციულ სტრუქტურას

ე) კონკურენტების ანალიზს

პასუხი: გ

22. **რა არის მარკეტინგის „ადგილი"?**

ა) პროდუქტის ხარისხი

ბ) განაწილების არხები

გ) ფინანსური ანგარიში

დ) თანამშრომლების შეფასება

ე) კონკურენტების ანალიზი

პასუხი: ბ

23. **SWOT-ის „საფრთხე" არის:**

ა) შიდა უპირატესობა

ბ) გარე უარყოფითი ფაქტორი

გ) შიდა სისუსტე

დ) ფინანსური მაჩვენებელი

ე) მარკეტინგული გეგმა

პასუხი: ბ

24. **Porter-ის 5 ძალის ერთ-ერთი ფაქტორია:**

ა) თანამშრომლების შესაძლებლობები

ბ) მყიდველების ძალა

გ) ფინანსური ანგარიში

დ) მარკეტინგული გეგმა

ე) ორგანიზაციული სტრუქტურა

პასუხი: ბ

25. **BCG მატრიცის „ვარსკვლავი" ნიშნავს:**

ა) მაღალი ზრდა, მაღალი წილი

ბ) დაბალი ზრდა, მაღალი წილი

გ) მაღალი ზრდა, დაბალი წილი

დ) დაბალი ზრდა, დაბალი წილი

ე) ფინანსურ ანგარიშს

პასუხი: ა

26. **PESTEL-ის „L" ნიშნავს:**

ა) თანამშრომლების შესაძლებლობებს

ბ) სამართლებრივ გარემოს

გ) ფინანსურ ანგარიშს

დ) მარკეტინგულ გეგმას

ე) ორგანიზაციულ სტრუქტურას

პასუხი: ბ

27. **რა არის ორგანიზაციის მისია?**

ა) გრძელვადიანი მიზნები

ბ) ორგანიზაციის არსებობის მიზანი

გ) ფინანსური ანგარიში

დ) მარკეტინგული გეგმა

ე) თანამშრომლების შეფასება

პასუხი: ბ

28. **ფინანსური სტრატეგიის მიზანია:**

ა) თანამშრომლების შეფასება

ბ) ფინანსური რესურსების ეფექტური გამოყენება

გ) მარკეტინგული გეგმის შექმნა

დ) გაყიდვების შემცირება

ე) კონკურენტების ანალიზი

პასუხი: ბ

29. **მარკეტინგის „პრომოცია“ მოიცავს:**

ა) თანამშრომლების შესაძლებლობებს

ბ) რეკლამას, საზოგადოებასთან ურთიერთობას

გ) ფინანსურ ანგარიშს

დ) ორგანიზაციულ სტრუქტურას

ე) კონკურენტების ანალიზს

პასუხი: ბ

30. **SWOT-ის „შესაძლებლობა“ არის:**

ა) შიდა სისუსტე

ბ) გარე დადებითი ფაქტორი

გ) შიდა უპირატესობა

დ) ფინანსური მაჩვენებელი

ე) მარკეტინგული გეგმა

პასუხი: ბ

31. **Porter-ის 5 ძალის „შემცვლელები“ ნიშნავს:**

ა) თანამშრომლების შესაძლებლობებს

ბ) პროდუქტის ალტერნატივებს

გ) ფინანსურ ანგარიშს

დ) მარკეტინგულ გეგმას

ე) ორგანიზაციულ სტრუქტურას

პასუხი: ბ

32. **BCG მატრიცის „კითხვის ნიშანი“ ნიშნავს:**

ა) მაღალი ზრდა, დაბალი წილი

ბ) დაბალი ზრდა, მაღალი წილი

გ) მაღალი ზრდა, მაღალი წილი

დ) დაბალი ზრდა, დაბალი წილი

ე) ფინანსურ ანგარიშს

პასუხი: ა

სწორი/არასწორი (33–40, 1 ქულა თითო)

33. ჩართული მხარეები მოიცავს მხოლოდ მფლობელებს.

    პასუხი: არასწორი

34. SWOT ანალიზი მოიცავს მხოლოდ შიდა ფაქტორებს.

    პასუხი: არასწორი

35. Porter-ის 5 ძალა გამოიყენება ბაზრის კონკურენტუნარიანობის შესაფასებლად.

    პასუხი: სწორი

36. BCG მატრიცა გამოიყენება ფინანსური ანგარიშის შესადგენად.

    პასუხი: არასწორი

37. მარკეტინგის 4P მოიცავს პროდუქტს, ფასს, ადგილს, პრომოციას.

    პასუხი: სწორი

38. ფინანსური მენეჯმენტი ფოკუსირდება მხოლოდ გაყიდვებზე.

    პასუხი: არასწორი

39. PESTEL ანალიზი აანალიზებს გარე ფაქტორებს.

    პასუხი: სწორი

40. სტრატეგიული დაგეგმვა მხოლოდ მარკეტინგს ეხება.

    პასუხი: არასწორი

ღია კითხვები (41–49, 2 ქულა თითო)

41. **აღწერეთ, რა არის ჩართული მხარე, და მიუთითეთ ერთი მაგალითი.**

    მაგალითი: ჩართული მხარეა ნებისმიერი პირი ან ჯგუფი, რომელიც გავლენას ახდენს ან განიცდის ორგანიზაციის საქმიანობას. მაგალითი: მომხმარებლები.

42. **აღწერეთ, როგორ მოქმედებს გარე გარემო ბიზნესის სტრატეგიაზე.**

    მაგალითი: გარე გარემო, როგორიცაა ეკონომიკური ცვლილებები, გავლენას ახდენს ფასების ან გაყიდვების სტრატეგიაზე. მაგ., რეცესია ამცირებს მოთხოვნას.

43. **აღწერეთ, რა არის ორგანიზაციული სტრუქტურა.**

    მაგალითი: ორგანიზაციული სტრუქტურა განსაზღვრავს, თუ როგორაა განაწილებული როლები, პასუხისმგებლობები და ძალაუფლება.

44. **აღწერეთ, როგორ გამოიყენება KPI-ები პერფორმანსის შესაფასებლად.**

    მაგალითი: KPI-ები ზომავს ორგანიზაციის მიზნების მიღწევას, მაგ., გაყიდვების ზრდა 10%-ით.

45. **აღწერეთ, რა არის სტრატეგიული დაგეგმვა.**

    მაგალითი: სტრატეგიული დაგეგმვა არის გრძელვადიანი მიზნების დასახვა და მათი მიღწევის გეგმის შემუშავება.

46. **აღწერეთ, როგორ შეიძლება SWOT ანალიზის გამოყენება ბიზნესის დაგეგმვაში.**

    მაგალითი: SWOT ანალიზი ეხმარება ბიზნესს, განსაზღვროს ძლიერი მხარეები და გამოიყენოს ისინი შესაძლებლობებისთვის, მაგ., მაღალი ხარისხის პროდუქტის გაფართოება.

47. **აღწერეთ, რა არის მარკეტინგის 4P.**

    მაგალითი: მარკეტინგის 4P: პროდუქტი, ფასი, ადგილი, პრომოცია, რომლებიც განსაზღვრავს მარკეტინგულ სტრატეგიას.

48. **აღწერეთ, რა არის Porter-ის 5 ძალა.**

    მაგალითი: Porter-ის 5 ძალა აანალიზებს კონკურენტებს, მყიდველებს, მომწოდებლებს, შემცვლელებსა და ახალ მოთამაშეებს.

49. **აღწერეთ, რა არის BCG მატრიცა.**

    მაგალითი: BCG მატრიცა კლასიფიცირებს პროდუქტებს ზრდისა და ბაზრის წილის მიხედვით: ვარსკვლავი, ფულის ძროხა, კითხვის ნიშანი, ძაღლი.

ანალიტიკური ამოცანები (50–54)

50. **SWOT ანალიზი (2 ქულა)**

    აღწერა: მაღაზიას ყავს ერთგული მომხმარებლები, მაგრამ მცირე მარკეტინგული ბიუჯეტი. ბაზარზე იზრდება მოთხოვნა, მაგრამ კონკურენტებიც ძლიერდებიან. განსაზღვრეთ ერთი ძლიერი მხარე, სისუსტე, შესაძლებლობა, საფრთხე.

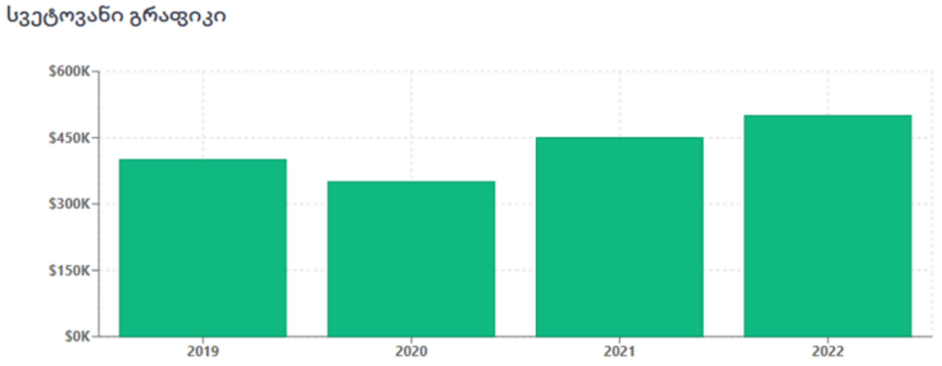
    პასუხი:

- ძლიერი: ერთგული მომხმარებლები.
- სისუსტე: მცირე მარკეტინგული ბიუჯეტი.

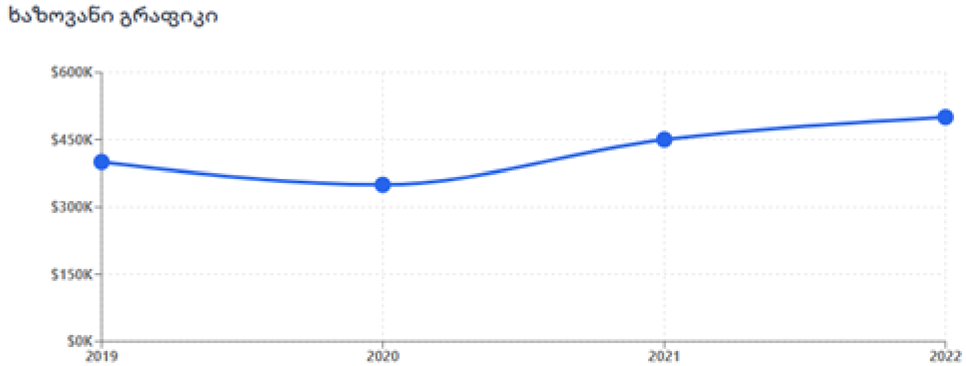
- შესაძლებლობა: მოთხოვნის ზრდა.
- საფრთხე: ძლიერი კონკურენტები.

51. **გრაფიკის ანალიზი (2 ქულა)**

    აღწერა: მოცემულია კომპანიის გაყიდვები ($): 2019: $400K, 2020: $350K, 2021: $450K, 2022: $500K. განსაზღვრეთ ტენდენცია (ზრდა/კლება) და ყველაზე დაბალი წელი.



კომპანიის გაყიდვები 2019-2022 წწ.



პასუხი:

- ტენდენცია: ზრდა (2020-ის შემდეგ).
- ყველაზე დაბალი: 2020 ($350K).

52. **Porter-ის 5 ძალა (2 ქულა)**

    აღწერა: კომპანია ყიდის ელექტრონულ მოწყობილობებს. მყიდველები ითხოვენ დაბალ ფასებს, მაგრამ მომწოდებლები ზრდიან ფასებს. განსაზღვრეთ ძლიერი ფაქტორი, სუსტი ფაქტორი, და გადაწყვეტილება (1–2 წინადადება).

    პასუხი:

- ძლიერი: მყიდველების ძალა (დაბალი ფასების მოთხოვნა).
- სუსტი: მომწოდებლების ძალა (ფასების ზრდა).
- გადაწყვეტილება: მოვიძიოთ ახალი მომწოდებლები დაბალი ფასებით.

53. PESTEL ანალიზი (2 ქულა)

აღწერა: კვების კომპანიას სურს გაფართოება. ტექნოლოგიური განვითარება ხელს უწყობს წარმოებას, მაგრამ გარემოსდაცვითი რეგულაციები მკაცრდება. განსაზღვრეთ ხელშემწყობი ფაქტორი, შემზღუდველი ფაქტორი, და გადაწყვეტილება.

პასუხი:

- ხელშემწყობი: ტექნოლოგიური განვითარება.
- შემზღუდველი: გარემოსდაცვითი რეგულაციები.
- გადაწყვეტილება: გამოვიყენოთ მდგრადი წარმოების მეთოდები.

54. BCG მატრიცა (4 ქულა)

აღწერა: კომპანიას აქვს ორი პროდუქტი:

- A: მაღალი ბაზრის ზრდა, დაბალი წილი.
- B: დაბალი ბაზრის ზრდა, მაღალი წილი.

განსაზღვრეთ თითოეულის კატეგორია (ვარსკვლავი, ფულის ძროხა, კითხვის ნიშანი, ძაღლი) და გადაწყვეტილება (1–2 წინადადება).

BCG მატრიცა - კომპანია "ეპსილონი"

პროდუქტების მონაცემები

პროდუქტი	ბაზრის ზრდა	ბაზრის წილი
A	10%	10%
B	2%	60%

პასუხი:

- A: კითხვის ნიშანი.
- B: ფულის ძროხა.
- გადაწყვეტილება: ინვესტირება A-ში ზრდისთვის, B-დან მოგების გამოყენება.

ქვემოთ მოცემულია შემთხვევები ადაპტირებული განათლების ადმინისტრირების სტუდენტებისთვის, Capstone 2.0-ის სახელმძღვანელოზე დაყრდნობით. შემთხვევები ეფუძნება „EduTrend University"-ის მართვას, რომელიც მდებარეობს თბილისში და გთავაზობთ სამ საგანმანათლებლო პროგრამას: ბაკალავრიატი, მაგისტრატურა, დოქტორანტურა. სავარჯიშოები შედგება მარტივი დავალებებისგან, მაგრამ მოითხოვს ზუსტ, კონკრეტულ დასაბუთებებს, რომლებიც გამყარებული უნდა იყოს ტექსტში მოწოდებული მონაცემებით. გადაწყვეტილებების მიღება ხდება 4 დეპარტამენტში (კვლევა და განვითარება, მარკეტინგი, „წარმოება", ფინანსები). უნივერსიტეტის მიზანია: ცნობადობის გაზრდა, სტუდენტების რაოდენობისა და მოგების ზრდა, ხარისხიანი, მრავალმიმართულებიანი და მრავალფუნქციური კურსების შეთავაზება დაბალი ფასებით.

კონტექსტი

„EduTrend University" გთავაზობთ სამ პროგრამას:
ბაკალავრიატი: ფასი: 3000 ლარი/წელი, ხარჯი: 1000 ლარი/სტუდენტი (3-4 წლიანი, მრავალმიმართულებიანი კურსები, მაგ., ბიზნესი, IT, ჰუმანიტარული მეცნიერებები; მიზანი: ხელმისაწვდომი ხარისხი).**მაგისტრატურა**: ფასი: 5000 ლარი/წელი, ხარჯი: 2000 ლარი/სტუდენტი (1-2 წლიანი, მოკლე, მრავალფუნქციური კურსები, მაგ., MBA, მონაცემთა ანალიზი; მიზანი: მაღალი ხარისხი).**დოქტორანტურა**: ფასი: 7000 ლარი/წელი, ხარჯი: 3000 ლარი/სტუდენტი (2-3 წლიანი, სპეციალიზებული,

კვლევაზე ორიენტირებული კურსები, მაგ., განათლების მენეჯმენტი, AI; მიზანი: პრესტიჟი).

სეგმენტები:
ბაკალავრიატის სეგმენტი: 20,000 პოტენციური სტუდენტი (სკოლის კურსდამთავრებულები, ეძებენ ხელმისაწვდომ, მრავალმიმართულებიან განათლებას).**მაგისტრატურის სეგმენტი**: 10,000 პოტენციური სტუდენტი (პროფესიონალები, ეძებენ მოკლე, მაღალი ხარისხის კურსებს).**დოქტორანტურის სეგმენტი**: 5,000 პოტენციური სტუდენტი (მკვლევრები, ეძებენ სპეციალიზებულ, მრავალფუნქციურ განათლებას).

ძირითადი მონაცემები:
ბაზრის ზრდა: 10%/წელი (მოთხოვნა იზრდება ონლაინ და მოკლე კურსებზე).**EduTrend-ის წილი**: 10% თითო სეგმენტში (2000 სტუდენტი ბაკალავრიატზე, 1000 მაგისტრატურაზე, 500 დოქტორანტურაზე).**ცნობადობა**: 50% (ნახევარი სეგმენტის იცნობს პროგრამებს).**ხელმისაწვდომობა**: 50% (პროგრამები ხელმისაწვდომია ნახევარი სეგმენტისთვის, მაგ., ონლაინ პლატფორმის ან კამპუსის მეშვეობით).**სიმძლავრე**: 3000 სტუდენტი/წელი (100 კლასი, თითო 30 სტუდენტისთვის, პლუს ონლაინ პლატფორმა 1000 სტუდენტისთვის).**ფიქსირებული ხარჯები**: 500,000 ლარი/წელი (ლექტორების ხელფასები, კამპუსის მოვლა).**მიზანი**: Contribution Margin ≥20%, სტუდენტების რაოდენობის გაზრდა 20%-ით (3600 სტუდენტამდე), მოგების გაორმაგება (1,950,000 ლარიდან 3,900,000 ლარამდე), ხარისხიანი, მოკლე, მრავალფუნქციური კურსები დაბალი ფასებით (მაგ., ბაკალავრიატის ფასის შენარჩუნება 3000 ლარზე).**კონკურენტები**: თსუ (ბაკალავრიატი: 3500 ლარი), ილიაუნი (მაგისტრატურა: 4500 ლარი), Coursera (ონლაინ კურსები: 1000 ლარი).

SMART მიზანის განსაზღვრა
მონაცემები: „EduTrend"-ს სურს ბაკალავრიატის სეგმენტში (20,000 სტუდენტი, 10% წილი, 2000 სტუდენტი) სტუდენტების 20%-ით გაზრდა.
დავალება:
ა) დაწერეთ SMART მიზანი ბაკალავრიატის სტუდენტებისთვის.
ბ) ახსენით, როგორ უწყობს ეს მიზანი ხელს უნივერსიტეტის მიზანს (სტუდენტებისა და მოგების გაზრდა).

3 points

სტუდენტთა რაოდენობის პროგნოზი
მონაცემები: ბაკალავრიატის სეგმენტი: 20,000 სტუდენტი, ზრდა: 10%/წელი, „EduTrend"-ის წილი: 10% (2000 სტუდენტი).
დავალება:
ა) გამოთვალეთ სეგმენტის ზომა მომავალ წელს.

ბ) თუ წილი გაიზრდება 12%-მდე 5000 ლარიანი კამპანიის შედეგად, რამდენი სტუდენტი ჩაირიცხება?

3 points

სწავლის ფასის განსაზღვრა

მონაცემები: მაგისტრატურა: ხარჯი 2000 ლარი/სტუდენტი, ფასი 5000 ლარი, 500 სტუდენტი. სეგმენტი (10,000 სტუდენტი) მოითხოვს მოკლე, მრავალფუნქციურ კურსებს. ილიაუნის ფასი: 4500 ლარი.

დავალება:

ა) გამოთვალეთ Contribution Margin 5000 ლარის ფასისთვის.

ბ) ახსენით, ღირს თუ არა ფასის 4500 ლარამდე შემცირება სტუდენტების 10%-ით გაზრდისთვის.

3 points

ცნობადობის გაზრდა

მონაცემები: ბაკალავრიატის ცნობადობა: 50%, 2000 სტუდენტი. 5000 ლარიანი სოციალური მედიის კამპანია (TikTok, Instagram) ზრდის ცნობადობას 10%-ით, რაც ზრდის სტუდენტებს 10%-ით.

დავალება:

ა) გამოთვალეთ ახალი ცნობადობა და სტუდენტების რაოდენობა.

ბ) განმარტეთ, როგორ დაუჭერს მხარს ეს უნივერსიტეტის მიზანს (სტუდენტებისა და მოგების გაზრდა).

3 points

სტუდენტების მოზიდვის პროგნოზი

მონაცემები: მაგისტრატურის სეგმენტი: 10,000 სტუდენტი, წილი: 10% (1000 სტუდენტი), ცნობადობა: 50%, ხელმისაწვდომობა: 50%. ფორმულა: სტუდენტები = წილი × ცნობადობა × ხელმისაწვდომობა × სეგმენტის ზომა.

დავალება:

ა) გამოთვალეთ მაგისტრატურის სტუდენტების რაოდენობა.

ბ) განმარტეთ, როგორ გააუმჯობესებთ პროგნოზს 5000 ლარიანი ინვესტიციით ხელმისაწვდომობის 60%-მდე გაზრდით.

3 points

სწავლის ხარჯის შემცირება

მონაცემები: ბაკალავრიატის ღირებულება: 1000 ლარი/სტუდენტი, 2000 სტუდენტი. 10,000 ლარიანი ონლაინ პლატფორმის განახლება (Canvas-ის ინტეგრაცია) ამცირებს ხარჯს 100 ლარით/სტუდენტი.

დავალება:

ა) გამოთვალეთ ახალი ღირებულება და Contribution Margin.

ბ) განმარტეთ, ღირს თუ არა ინვესტიცია მოგების გაზრდისთვის.

3 points

მოგების ანგარიში

მონაცემები: ბაკალავრიატი: 2000 სტუდენტი, ფასი: 3000 ლარი, ღირებულება: 1000 ლარი. ფიქსირებული ხარჯები: 500,000 ლარი.

დავალება:

ა) გამოთვალეთ მოგება.

ბ) განმარტეთ, როგორ გამოიყენებთ მონაცემებს სტუდენტების 20%-ით გაზრდისთვის.

3 points

Contribution Margin ანალიზი

მონაცემები: მაგისტრატურა: ფასი 5000 ლარი, ღირებულება 2000 ლარი, 500 სტუდენტი. დოქტორანტურა: ფასი 7000 ლარი, ღირებულება 3000 ლარი, 300 სტუდენტი.

დავალება:

ა) გამოთვალეთ Contribution Margin ორივე პროგრამისთვის.

ბ) განმარტეთ, რომელ პროგრამაზე გააკეთოთ ფოკუსი მოგების გაორმაგებისთვის.

3 points

სტრატეგიის არჩევანი

მონაცემები: ბაკალავრიატი: ფასი 3000 ლარი, ხარჯი 1000 ლარი, 2000 სტუდენტი. თსუ: 3500 ლარი. სეგმენტი (20,000) მოითხოვს ხელმისაწვდომ, მრავალმიმართულებიან განათლებას.

დავალება:

ა) აირჩიეთ სტრატეგია (ხარჯების ლიდერობა თუ დიფერენციაცია).

ბ) განმარტეთ, როგორ უწყობს ხელს ეს სტუდენტების 20%-ით გაზრდას.

3 points

სტიპენდიის გადაწყვეტილება

მონაცემები: ბაკალავრიატი: ფასი 3000 ლარი, ხარჯი 1000 ლარი, 2000 სტუდენტი. 10,000 ლარიანი სტიპენდია 20 სტუდენტს დაუფინანსდება სწავლა.

დავალება:

ა) გადაწყვიტეთ, გასცეთ თუ არა სტიპენდია.

ბ) განმარტეთ, როგორ აისახება ეს ცნობადობისა და სტუდენტების რაოდენობის ზრდაზე.

3 points

The test assesses your knowledge and analytical skills in strategic management.

Instructions:

• The test contains 70 questions:

• 32 multiple choice (1 point, 32 points).

• 8 true/false (1 point, 8 points).

• 9 open-ended (2 points, 18 points).

• 5 analytical ($4 \times 2 + 1 \times 4 = 12$ points).

• 10 practical exercises (3 points, 30 points).

• Total: 100 points.

• Time: 120 minutes.

• Instructions:

• - For multiple choice and true/false questions, choose one correct answer.

• - For open-ended questions, indicate a short, complete answer (2–3 sentences).

• - For analytical tasks, follow the instructions, use tables/graphs.

Multiple Choice (1–32, 1 point each)

1. What is the main goal of a business?

a) Profit maximization

b) Employee satisfaction

c) Product quality improvement

d) Market share reduction

e) Sales reduction

Answer: A

2. Who is considered a stakeholder?

a) Owners only

b) Owners, employees, customers

c) Customers only

d) Government only

e) Competitors only

Answer: B

3. What is the purpose of a SWOT analysis?

a) Prepare a financial report

b) Create a marketing plan

c) Identify internal and external factors

d) Evaluate employees

e) Determine product pricing

Answer: C

4. What is the main function of an organizational structure?

a) Creating a marketing campaign

b) Simplifying decision-making

c) Preparing a financial report

d) Attracting customers

e) Analyzing competitors

Answer: b

5. What is the purpose of KPI (Key Performance Indicator)?

a) Determining employee salaries

b) Measuring organizational performance

c) Reducing product price

d) Reducing market share

e) Creating a marketing campaign

Answer: b

6. What are the 4Ps of marketing?

a) Product, price, place, promotion

b) Product, price, profit, presentation

c) Quality, price, place, customer

d) Employees, price, profit, product

e) Product, competitor, price, place

Answer: a

7. What is the purpose of Porter's 5 forces?

a) Analysis of internal business factors

b) Employee evaluation

c) Preparation of financial statements

d) Market competitiveness analysis

e) Creation of a marketing campaign

Answer: d

8. The BCG matrix is used to:

a) Prepare financial statements

b) Analyze the product portfolio

c) Evaluate employees

d) Create a marketing plan

e) Reduce sales

Answer: b

9. What is the focus of PESTEL analysis?

a) Internal factors

b) External factors

c) Employee evaluation

d) Financial indicators

e) Marketing campaign

Answer: b

10. What is the purpose of strategic planning?

a) Determining employee salaries

b) Setting long-term goals

c) Creating a marketing campaign

d) Reducing product prices

e) Reducing sales

Answer: b

11. The main task of financial management is:

a) Creating a marketing plan

b) Evaluating employees

c) Managing financial resources

d) Attracting customers

e) Analyzing competitors

Answer: c

12. What is the organization's strength in SWOT?

a) External opportunity

b) Internal advantage

c) External threat

d) Internal weakness

e) Financial report

Answer: b

13. What is the goal of marketing strategy?

a) Drawing up a financial report

b) Evaluating employees

c) Attracting customers

d) Reducing sales

e) Creating an organizational structure

Answer: c

14. What is the external environment of a business?

a) Employee capabilities

b) Internal structure of the organization

c) Economic, social, technological factors

d) Financial report

e) Marketing campaign

Answer: c

15. What is the purpose of financial analysis?

a) Employee evaluation

b) Assessment of the financial condition of the organization

c) Creation of a marketing plan

d) Reduction of sales

e) Analysis of competitors

Answer: b

16. Which part of SWOT is external?

a) Strengths

b) Weaknesses

c) Opportunities, threats

d) Strengths, weaknesses

e) Financial indicators

Answer: c

17. Porter's 5 forces include:

a) Employee capabilities

b) Financial statement

c) Analysis of competitors, buyers, suppliers

d) Marketing plan

e) Organizational structure

Answer: c

18. The BCG matrix "cash cow" means:

a) High growth, low share

b) Low growth, high share

c) High growth, high share

d) Low growth, low share

e) Financial statement

Answer: b

19. One of the PESTEL factors is:

a) Employee capabilities

b) Economic environment

c) Internal structure of the organization

d) Financial statement

e) Marketing campaign

Answer: b

20. What is strategy implementation?

a) Employee evaluation

b) Financial reporting

c) Implementing the plan into practice

d) Creating a marketing campaign

e) Decreasing sales

Answer: C

21. Financial indicators include:

a) Employee capabilities

b) Marketing plan

c) Profit, revenue, expenses

d) Organizational structure

e) Competitor analysis

Answer: C

22. What is the “place” of marketing?

a) Product quality

b) Distribution channels

c) Financial reporting

d) Employee evaluation

e) Competitor analysis

Answer: C

23. The “threat” of SWOT is:

a) internal advantage

b) external negative factor

c) internal weakness

d) financial indicator

e) marketing plan

Answer: B

24. One of the factors of Porter's 5 forces is:

a) employee capabilities

b) buyer power

c) financial statement

d) marketing plan

e) organizational structure

Answer: B

25. The “star” of the BCG matrix means:

a) high growth, high share

b) low growth, high share

c) high growth, low share

d) low growth, low share

e) financial statement

Answer: A

26. The “L” of PESTEL means:

a) employee capabilities

b) legal environment

c) financial statement

d) marketing plan

e) organizational structure

Answer: B

27. What is the mission of the organization?

a) Long-term goals

b) The purpose of the organization's existence

c) Financial report

d) Marketing plan

e) Employee evaluation

Answer: B

28. The purpose of financial strategy is:

a) Employee evaluation

b) Effective use of financial resources

c) Creating a marketing plan

d) Reducing sales

e) Analyzing competitors

Answer: B

29. Marketing "promotion" includes:

a) Employee capabilities

b) Advertising, public relations

c) Financial report

d) Organizational structure

e) Competitor analysis

Answer: B

30. SWOT "opportunity" is:

a) Internal weakness

b) External positive factor

c) Internal advantage

d) Financial indicator

e) Marketing plan

Answer: B

31. Porter's 5 forces "substitutes" mean:

a) Employee capabilities

b) Product alternatives

c) Financial Report

D) Marketing Plan

E) Organizational Structure

Answer: B

32. The “question mark” in the BCG matrix means:

A) High growth, low share

B) Low growth, high share

C) High growth, high share

D) Low growth, low share

E) Financial Report

Answer: A

True/False (33–40, 1 point each)

33. Stakeholders include only owners.

Answer: False

34. SWOT analysis includes only internal factors.

Answer: False

35. Porter’s 5 Forces are used to assess the competitiveness of the market.

Answer: True

36. The BCG matrix is used to prepare a financial report.

Answer: False

37. The 4Ps of marketing include product, price, place, and promotion.

Answer: True

38. Financial management focuses only on sales.

Answer: False

39. PESTEL analysis analyzes external factors.

Answer: True

40. Strategic planning is only about marketing.

Answer: False

Open-ended questions (41–49, 2 points each)

41. Describe what a stakeholder is, and give one example.

Example: A stakeholder is any person or group that affects or is affected by an organization's activities. Example: Customers.

42. Describe how the external environment affects business strategy.

Example: External environments, such as economic changes, affect pricing or sales strategies. For example, a recession reduces demand.

43. Describe what an organizational structure is.

Example: An organizational structure determines how roles, responsibilities, and authority are distributed.

44. Describe how KPIs are used to measure performance.

Example: KPIs measure the achievement of an organization's goals, e.g., a 10% increase in sales.

45. Describe what strategic planning is.

Example: Strategic planning is the process of setting long-term goals and developing a plan to achieve them.

46. Describe how SWOT analysis can be used in business planning.

Example: SWOT analysis helps a business identify strengths and leverage them to exploit opportunities, e.g., expanding a high-quality product.

47. Describe what the 4Ps of marketing are.

Example: The 4Ps of marketing: product, price, place, and promotion, determine marketing strategy.

48. Describe what Porter's 5 Forces are.

Example: Porter's 5 Forces analyze competitors, buyers, suppliers, substitutes, and new entrants.

49. Describe what the BCG matrix is.

Example: The BCG matrix classifies products by growth and market share: star, cash cow, question mark, dog.

Analytical tasks (50–54)

50. SWOT analysis (2 points)

Description: A store has loyal customers but a small marketing budget. Demand in the market is growing, but competitors are also getting stronger. Identify one strength, weakness, opportunity, threat.

Answer:

• Strength: Loyal customers.

• Weakness: Small marketing budget.

• Opportunity: Growing demand.

• Threat: Strong competitors.

51. Graph analysis (2 points)

Description: The company's sales ($) are given: 2019: $400K, 2020: $350K, 2021: $450K, 2022: $500K. Determine the trend (growth/decline) and the lowest year.

Answer:

• Trend: Growth (after 2020).

• Lowest: 2020 ($350K).

52. Porter's 5 Forces (2 points)

Description: A company sells electronic devices. Buyers are demanding lower prices, but suppliers are raising prices. Identify the strong factor, weak factor, and decision (1–2 sentences).

Answer:

• Strong: Buyer power (demanding lower prices).

• Weak: Supplier power (increasing prices).

• Decision: Find new suppliers with lower prices.

53. PESTEL Analysis (2 points)

Description: A food company wants to expand. Technological developments are facilitating production, but environmental regulations are tightening. Identify the enabling factor, limiting factor, and decision.

Answer:

• Enabling factor: Technological developments.

• Limiting factor: Environmental regulations.

• Decision: Use sustainable production methods.

54. BCG Matrix (4 points)

Description: A company has two products:

• A: High market growth, low share.

• B: Low market growth, high share.

Identify the category of each (star, cash cow, question mark, dog) and the decision (1–2 sentences).

Answer:

• A: Question mark.

• B: Cash cow.

• Decision: Invest in A for growth, use profits from B.

Below are cases for students of adaptive education administration, based on the Capstone 2.0 textbook. The cases are based on the management of "EduTrend University", which is located in Tbilisi and offers three educational programs: bachelor's, master's, and doctoral. The exercises consist of simple tasks, but require precise, specific justifications, which must be supported by the data provided in the text. Decisions are made in 4 departments (Research and Development, Marketing, "Production", Finance). The university's goal is: to increase awareness, increase the number of students and profits, offer high-quality, multidisciplinary and multifunctional courses at low prices.

Context

EduTrend University offers three programs:

Bachelor's degree: Price: 3,000 GEL/year, Cost: 1,000 GEL/student (3-4 years, multidisciplinary courses, e.g., business, IT, humanities; goal: affordable degree).Master's degree: Price: 5,000 GEL/year, Cost: 2,000 GEL/student (1-2 years, short, multidisciplinary courses, e.g., MBA, data analysis; goal: high degree).Doctoral degree: Price: 7,000 GEL/year, Cost: 3,000 GEL/student (2-3 years, specialized, research-oriented courses, e.g., educational management, AI; goal: prestige).

Segments:

Bachelor's segment: 20,000 potential students (school graduates, looking for affordable, multi-disciplinary education).Master's segment: 10,000 potential students (professionals, looking for short, high-quality courses).Doctoral segment: 5,000 potential students (researchers, looking for specialized, multi-disciplinary education).

Key figures:

Market growth: 10%/year (demand for online and short courses is growing).EduTrend share: 10% per segment (2000 undergraduate students, 1000 master's students, 500 doctoral students).Awareness: 50% (half of the segment is aware of the programs).Availability: 50% (programs are available to half of the segment, e.g., via an online platform or campus).Capacity: 3000 students/year (100 classes, each for 30 students, plus an online platform for 1000 students).Fixed costs: 500,000 GEL/year (lecturer salaries, campus maintenance).Goal: Contribution Margin ≥20%, increase the number of students by 20% (up to 3600 students), double profits (from 1,950,000 GEL to 3,900,000 GEL), quality, short, multifunctional courses at low prices (e.g., keeping the price of a bachelor's degree at 3,000 GEL). Competitors: TSU (bachelor's degree: 3,500 GEL), Iliauni (master's degree: 4,500 GEL), Coursera (online courses: 1,000 GEL).

Define a SMART goal

Data: “EduTrend” wants to increase the number of students in the bachelor's segment (20,000 students, 10% share, 2,000 students) by 20%.

Assignment:

a) Write a SMART goal for bachelor's students.

b) Explain how this goal contributes to the university's goal (increase students and profits).

3 points

Student Enrollment Forecast

Data: Bachelor’s segment: 20,000 students, growth: 10%/year, EduTrend’s share: 10% (2,000 students).

Assignment:

a) Calculate the size of the segment next year.

b) If the share increases to 12% as a result of a 5,000 GEL campaign, how many students will enroll?

3 points

Determining the cost of education

Data: Master's: cost 2,000 GEL/student, price 5,000 GEL, 500 students. The segment (10,000 students) requires short, multifunctional courses. Iliauni's price: 4,500 GEL.

Assignment:

a) Calculate the Contribution Margin for a price of 5,000 GEL.

b) Explain whether it is worth reducing the price to 4500 GEL to increase the number of students by 10%.

3 points

Increase awareness

Data: Bachelor's awareness: 50%, 2000 students. A 5000 GEL social media campaign (TikTok, Instagram) increases awareness by 10%, which increases students by 10%.

Assignment:

a) Calculate the new awareness and number of students.

b) Explain how this will support the university's goal (increase students and profits).

3 points

Student attraction forecast

Data: Master's segment: 10,000 students, share: 10% (1000 students), awareness: 50%, accessibility: 50%. Formula: Students = Share × Awareness × Accessibility × Segment Size.

Task:

a) Calculate the number of Master's students.

b) Explain how you would improve the forecast by increasing accessibility to 60% with an investment of 5,000 GEL.

3 points

Reducing the cost of education

Data: Bachelor's cost: 1,000 GEL/student, 2,000 students. An online platform upgrade of 10,000 GEL (Canvas integration) reduces the cost by 100 GEL/student.

Task:

a) Calculate the new cost and Contribution Margin.

b) Explain whether the investment is worth it to increase profits.

3 points

Profit statement

Data: Bachelor's: 2,000 students, price: 3,000 GEL, cost: 1,000 GEL. Fixed costs: 500,000 GEL.

Assignment:

a) Calculate the profit.

b) Explain how you would use the data to increase the number of students by 20%.

3 points

Contribution Margin Analysis

Data: Master's: Price 5000 GEL, Cost 2000 GEL, 500 students. Doctoral: Price 7000 GEL, Cost 3000 GEL, 300 students.

Assignment:

a) Calculate the Contribution Margin for both programs.

b) Explain which program to focus on to double the profit.

3 points

Strategy Choice

Data: Bachelor's: Price 3000 GEL, Cost 1000 GEL, 2000 students. TSU: 3500 GEL. Segment (20,000) requires affordable, multidisciplinary education.

Assignment:

a) Choose a strategy (cost leadership or differentiation).

b) Explain how this contributes to a 20% increase in student enrollment.

3 points

Scholarship Decision

Data: Bachelor's degree: price 3,000 GEL, cost 1,000 GEL, 2,000 students. A scholarship of 10,000 GEL will finance the education of 20 students.

Assignment:

a) Decide whether to award a scholarship.

b) Explain how this will affect the increase in visibility and student enrollment.

Appendix B: Student Perception Questionnaire

კითხვარი: ტრადიციული სალექციო ჯგუფი

გთხოვთ, გულწრფელად და დეტალურად უპასუხოთ ქვემოთ მოცემულ კითხვებს, რათა მივიღოთ თქვენი გამოცდილების, შეხედულებებისა და შეფასებების სრულყოფილი სურათი ტრადიციული სალექციო მიდგომის შესახებ. თქვენი პასუხები კონფიდენციალურია და გამოყენებული იქნება მხოლოდ კვლევის მიზნებისთვის. ღია კითხვებზე გთხოვთ, მიუთითოთ კონკრეტული მაგალითები, ხოლო დახურულ კითხვებზე აირჩიოთ თქვენთვის შესაბამისი ვარიანტი.

ნაწილი 1: ღია კითხვები (გამოცდილებისა და შეხედულებების სიღრმისეული შეფასება)

1. როგორ აღწერდით თქვენ საერთო გამოცდილებას ტრადიციული სალექციო მიდგომით სწავლისას? რა იყო თქვენთვის ყველაზე სასარგებლო და ყველაზე ნაკლებად სასარგებლო ასპექტები?

2. რა გავლენა იქონია ლექციების ფორმატმა (მაგ., მასალის წარდგენის სტილი, სტრუქტურა) თქვენი მასალის გაგებასა და დამახსოვრებაზე? გთხოვთ, მიუთითოთ კონკრეტული მაგალითი, სადაც ლექციამ გაგიადვილათ ან გაგიჭირდათ სწავლა.

3. როგორი იყო თქვენი ურთიერთობა ლექტორთან? რამდენად გრძნობდით, რომ თქვენი კითხვები, ინტერესები ან სირთულეები იყო გათვალისწინებული? მიუთითეთ მაგალითი.

4. რა იყო თქვენთვის ყველაზე მეტად მამოტივირებელი ლექციების დროს? გთხოვთ, აღწეროთ კონკრეტული სიტუაცია ან მომენტი, რომელიც განსაკუთრებით გახსოვთ.

5. რა იყო ნაკლებად მამოტივირებელი ან ხელისშემშლელი თქვენი სწავლის პროცესში? (შებრუნებული კითხვა, სანდოობის გადამოწმებისთვის)

ნაწილი 2: დახურული კითხვები (სტანდარტიზებული შეფასება)

6. რამდენად კმაყოფილი იყავით ტრადიციული სალექციო მიდგომით სწავლების?

   (ა) სრულიად უკმაყოფილო

   (ბ) ნაწილობრივ უკმაყოფილო

   (გ) ნეიტრალური

   (დ) ნაწილობრივ კმაყოფილი

   (ე) სრულიად კმაყოფილი

   გთხოვთ, განმარტოთ თქვენი არჩევანი:

7. რამდენად ხშირად გრძნობდით თავს მოტივირებულად ლექციის დროს?

(ა) ყოველთვის

(ბ) ხშირად

(გ) ზოგჯერ

(დ) იშვიათად

(ე) არასდროს

გთხოვთ, განმარტოთ, რა იწვევდა თქვენს მოტივაციას ან მის ნაკლებობას:

8. რამდენად ხშირად ფიქრობდით, რომ ლექციები ნაკლებად საინტერესო ან ნაკლებად ეფექტური იყო თქვენი სწავლისთვის? (შებრუნებული კითხვა)

   (ა) ყოველთვის

   (ბ) ხშირად

   (გ) ზოგჯერ

   (დ) იშვიათად

   (ე) არასდროს

   გთხოვთ, განმარტოთ, რა ასპექტები იყო ნაკლებად საინტერესო ან ეფექტური:

9. რამდენად მისაღები იყო ლექციების სტრუქტურა (მაგ., თემების თანმიმდევრობა, მასალის წარდგენის სტილი) თქვენი სწავლისთვის?

   (ა) ძალიან ხელსაყრელი

   (ბ) ზომიერად ხელსაყრელი

   (გ) ნეიტრალური

(დ) ნაკლებად ხელსაყრელი

(ე) საერთოდ არ იყო ხელსაყრელი

გთხოვთ, განმარტოთ, რა იყო ხელსაყრელი ან პრობლემური:

ნაწილი 3: ლექტორის მიდგომისა და ექსპერიმენტის სისწორის შეფასება

10. გაგაცნოთ თუ არა ლექტორმა სწავლის დაწყებამდე მისი მიდგომის (ტრადიციული სალექციო მეთოდის) შინაარსი და მიზნები? თუ დიახ, რამდენად გასაგები იყო ეს განმარტება? თუ არა, როგორ იმოქმედა ამან თქვენს სწავლის პროცესზე?

11. **რამდენად თანმიმდევრულად იცავდა ლექტორი ტრადიციული სალექციო მიდგომის ფორმატს (მაგ., ლექციების ჩატარება ძირითადად თეორიული მასალის მიწოდებით, მინიმალური ინტერაქციით)?**

    (ა) ყოველთვის იცავდა

    (ბ) ხშირად იცავდა

    (გ) ზოგჯერ იცავდა

    (დ) იშვიათად იცავდა

    (ე) საერთოდ არ იცავდა

    გთხოვთ, განმარტოთ თქვენი პასუხი, მაგ., მიუთითოთ შემთხვევები, როდესაც ლექტორი გადაუხვევდა ამ ფორმატს:

12. შეგიმჩნევიათ თუ არა, რომ ლექტორმა გამოიყენა ისეთი მეთოდები ან საშუალებები (მაგ., ინტერაქტიული დავალებები, ვიზუალური მასალა, გეიმიფიკაცია), რომლებიც არ შეესაბამება ტრადიციულ სალექციო მიდგომას? თუ დიახ, გთხოვთ, აღწეროთ ეს შემთხვევები და მათი გავლენა თქვენს სწავლაზე.

13. **რამდენად ხშირად ფიქრობდით, რომ ლექტორის მიდგომა (მაგ., მასალის წარდგენა, სტრუქტურა) არ იყო თანმიმდევრული ან გადაუხვევდა ლექციის მიზნებს?**

    (ა) ყოველთვის

    (ბ) ხშირად

(გ) ზოგჯერ

(დ) იშვიათად

(ე) არასდროს

გთხოვთ, განმარტოთ თქვენი პასუხი, მაგ., მიუთითოთ კონკრეტული მაგალითები:

14. **რამდენად კომპეტენტურად მიგაჩნიათ ლექტორი სტრატეგიული მენეჯმენტის საგანში?**

    (ა) ძალიან კომპეტენტური

    (ბ) ზომიერად კომპეტენტური

    (გ) ნეიტრალური

    (დ) ნაკლებად კომპეტენტური

    (ე) საერთოდ არ იყო კომპეტენტური

    გთხოვთ, განმარტოთ, რა განაპირობებდა თქვენს შეფასებას (მაგ., მასალის ცოდნა, განმარტების სიცხადე):

15. თუ თქვენი სასწავლო მოსწრება ამ საგანში არადამაკმაყოფილებელი იყო, ფიქრობთ თუ არა, რომ ამის მიზეზი შეიძლება იყოს ლექტორის კომპეტენცია ან მისი სწავლების მიდგომა? გთხოვთ, აღწეროთ, რა ფაქტორებმა იმოქმედა თქვენს მოსწრებაზე.

ნაწილი 4: შემაჯამებელი კითხვები

16. თქვენი აზრით, რა არის ტრადიციული სალექციო მიდგომის ყველაზე ძლიერი მხარე, რომელიც მას გამოარჩევს სხვა მეთოდებისგან (მაგ., სიმულაციური სწავლება)?

17. რას გვირჩევდით, რომ შეიცვალოს ან გაუმჯობესდეს ტრადიციული სალექციო მიდგომაში, რათა ის თქვენთვის უფრო ეფექტური ან საინტერესო გახდეს?

18. რომ გქონოდათ შესაძლებლობა, შეცვლიდით თუ არა ლექტორის მიდგომას (მაგ., მეტი ინტერაქცია, ნაკლები თეორია)? გთხოვთ, აღწეროთ, რა ცვლილებები იქნებოდა თქვენთვის ყველაზე სასარგებლო. (შებრუნებული კითხვა, გადამოწმებისთვის)

ინსტრუქციები სტუდენტებისთვის

- გთხოვთ, იყოთ გულწრფელი და დაწეროთ დეტალური პასუხები ღია კითხვებზე, რათა სრულად გავიგოთ თქვენი გამოცდილება.
- დახურულ კითხვებზე აირჩიეთ თქვენთვის ყველაზე შესაბამისი ვარიანტი და, თუ შესაძლებელია, განმარტეთ თქვენი არჩევანი ღია პასუხებში.
- თქვენი გამოხმაურება ძალიან მნიშვნელოვანია სწავლების მეთოდების გაუმჯობესებისა და კვლევის წარმატებისთვის.

დირექტიული, რეფლექსიური და ჩართული მენტორინგის სალექციო მიდგომით სწავლების შეფასების კითხვარი

1. როგორ აღწერდით თქვენს საერთო გამოცდილებას სიმულაციურ სწავლებაში, სადაც გამოიყენებოდა ან (დირექტიული, რეფლექსიური და ჩართული მიდგომა)? მიუთითეთ, რა იყო ყველაზე სასარგებლო და ნაკლებად სასარგებლო.
2. აღწერეთ კონკრეტული სიტუაცია (ები) სიმულაციიდან, რომელმაც გააძლიერა თქვენი მოტივაცია ან ჩართულობა, და განმარტეთ, რატომ იყო ის მნიშვნელოვანი.
3. აღწერეთ, რამდენად იმოქმედა სიმულაციის მექანიზმების არასაკმარისმა ცოდნამ თქვენს სწავლის შედეგებზე? მიუთითეთ ერთი მაგალითი.
4. აღწერეთ ერთი მაგალითი, სადაც თქვენი სიმულაციის დროს მიღებული გადაწყვეტილება ან მოქმედება შეესაბამებოდა სტრატეგიული მენეჯმენტის თეორიულ ცნებას (მაგ., SWOT, პორტერის ხუთი ძალა, 4p).
5. როგორი იყო ლექტორის მხარდაჭერა სიმულაციის დროს? მიუთითეთ ერთი მაგალითი, სადაც მისმა მიდგომამ გაგიადვილათ ან გაგირთულათ გადაწყვეტილების მიღება.

6. რამდენად რთული იყო სიმულაციის ათვისება თქვენთვის?

   (ა) ძალიან რთული
   (ბ) ზომიერად რთული
   (გ) არც რთული არც მარტივი
   (დ) ზომიერად მარტივი

(ე) ძალიან მარტივი

7. რამდენად შეესაბამებოდა სიმულაციის შინაარსი სტრატეგიური მენეჯმენტის თემებს (მაგ., SWOT, პორტერის ხუთი ძალა, PESTEL, BSG, 4P, SMART...)?

(ა) სრულად შეესაბამებოდა
(ბ) დიდწილად შეესაბამებოდა
(გ) თან შეესაბამებოდა თან არა
(დ) ნაწილობრივ შეესაბამებოდა
(ე) საერთოდ არ შეესაბამებოდა

8. რამდენად იყო სიმულაციის შინაარსი დაკავშირებული რეალურ სამყაროს სტრატეგიულ გამოწვევებთან?

(ა) ძალიან დაკავშირებული
(ბ) ზომიერად
(გ) ნეიტრალური
(დ) ნაკლებად
(ე) საერთოდ არ

9. რამდენად გამოსადეგი იქნება სიმულაციით მიღებული ცოდნა თქვენს პრაქტიკულ საქმიანობაში?

(ა) ძალიან გამოსადეგი
(ბ) ზომიერად
(გ) ნეიტრალური (დ) ნაკლებად (ე) საერთოდ არ
(დ) ნაკლებად
(ე) საერთოდ არ

10. რამდენად გაზარდა სიმულაციამ თქვენი ჩართულობა და მოტივაცია სწავლის პროცესში?

(ა) ძალიან გაზარდა
(ბ) ზომიერად
(გ) ნეიტრალური
(დ) ნაკლებად
(ე) საერთოდ არ

11. რამდენად გაზარდა ლექტორის მოქმედებებმა (მაგ., გეიმიფიკაცია, კონკურენციის წახალისება, აქტიური ჩართულობა) თქვენი ჩართულობა და მოტივაცია სწავლის პროცესში?

(ა) ძალიან გაზარდა
(ბ) ზომიერად
(გ) ნეიტრალური
(დ) ნაკლებად
(ე) საერთოდ არ

12. რამდენად გაზარდა თანაკურსელებს შორის კონკურენციამ თქვენი მოტივაცია სიმულაციის პროცესში?

(ა) ძალიან გაზარდა
(ბ) ზომიერად
(გ) ნეიტრალური
(დ) ნაკლებად
(ე) საერთოდ არ

13. რამდენად საინტერესო იყო სიმულაციებით სწავლება თქვენთვის?

(ა) ძალიან საინტერესო
(ბ) ზომიერად
(გ) ნეიტრალური
(დ) ნაკლებად
(ე) საერთოდ არ

14. გაგაცნოთ თუ არა ლექტორმა პედაგოგის როლისა და სიმულაციის მიზნების შინაარსი სწავლის დაწყებამდე? გთხოვთ, განმარტოთ, რამდენად გასაგები იყო განმარტება ან როგორ იმოქმედა მისმა არარსებობამ:

15. რამდენად იცავდა ლექტორი რომელიმე მენტორინგის მიდგომას (მაგ., გეიმიფიკაცია, კონკურენციის წახალისება, აქტიური ჩართულობა)?

(ა) ყოველთვის იცავდა
(ბ) ხშირად
(გ) ზოგჯერ

(დ) იშვიათად

(ე) საერთოდ არ

16. რამდენად კომპეტენტურად მიგაჩნიათ ლექტორი სტრატეგიული მენეჯმენტისა და სიმულაციის ხელმძღვანელობაში?

(ა) ძალიან კომპეტენტური

(ბ) ზომიერად

(გ) ნეიტრალური

(დ) ნაკლებად

(ე) საერთოდ არ

17. შეგიმჩნევიათ თუ არა, რომ ლექტორმა გამოიყენა მეთოდები (მაგ., პირდაპირი ინსტრუქციები), რომლებიც არ შეესაბამებოდა ჩართულ მიდგომას?

18. თუ თქვენი სასწავლო მოსწრება დაბალი იყო, ფიქრობთ თუ არა, რომ ამის მიზეზი შეიძლება იყოს ლექტორის მიდგომა?

19. ატარებდა თუ არა ლექტორი სიმულაციის შედეგების შემაჯამებელ ბრიფინგებს და რამდენად მნიშვნელოვანი იყო ის?

20. ფიქრობთ თუ არა, რომ სასარგებლო იქნებოდა სტრატეგიული მენეჯმენტისა და სხვა საგნების სწავლება სიმულაციებით?
გთხოვთ, მიუთითოთ ერთი მიზეზი, რატომ ფიქრობთ ასე:

21. რას გვირჩევდით, რომ გაუმჯობესდეს სიმულაციური სწავლება, რათა ის უფრო ეფექტური ან საინტერესო გახდეს?
გთხოვთ, მიუთითოთ ერთი კონკრეტული წინადადება:

QUESTIONNAIRE: TRADITIONAL LECTURE GROUP

Please answer the following questions honestly and in detail to provide a complete picture of your experiences, perspectives, and assessments regarding the traditional lecture approach. Your responses are confidential and will be used solely for research purposes. For open-ended questions, please provide specific examples, while for closed-ended questions, please select the option that best applies to you.

PART 1: OPEN-ENDED QUESTIONS (In-Depth Assessment of Experiences and Perspectives)

1. How would you describe your overall experience learning through the traditional lecture approach? What were the most beneficial and least beneficial aspects for you?

2. What impact did the lecture format (e.g., presentation style, structure of the material) have on your understanding and retention of the material? Please provide a specific example where the lecture made learning easier or more difficult for you.

3. What was your relationship with the lecturer like? To what extent did you feel that your questions, interests, or difficulties were taken into account? Please provide an example.

4. What was most motivating for you during the lectures? Please describe a specific situation or moment that was particularly memorable.

5. What was less motivating or hindering in your learning process? (Reverse question for reliability verification)

PART 2: CLOSED-ENDED QUESTIONS (Standardized Assessment)

6. How satisfied were you with learning through the traditional lecture approach?

- (a) Completely dissatisfied
- (b) Somewhat dissatisfied
- (c) Neutral
- (d) Somewhat satisfied
- (e) Completely satisfied

Please explain your choice:

7. How often did you feel motivated during lectures?

- (a) Always
- (b) Often
- (c) Sometimes
- (d) Rarely
- (e) Never

Please explain what caused your motivation or lack thereof:

8. How often did you think that lectures were less interesting or less effective for your learning? (Reverse question)

- (a) Always
- (b) Often
- (c) Sometimes
- (d) Rarely
- (e) Never

Please explain which aspects were less interesting or effective:

9. How suitable was the structure of lectures (e.g., sequence of topics, presentation style of material) for your learning?

- (a) Very suitable
- (b) Moderately suitable
- (c) Neutral
- (d) Less suitable
- (e) Not suitable at all

Please explain what was suitable or problematic:

PART 3: Assessment of Lecturer's Approach and Experimental Fidelity

10. Did the lecturer explain the content and objectives of their approach (traditional lecture method) before starting the course? If yes, how clear was this explanation? If no, how did this affect your learning process?

11. How consistently did the lecturer adhere to the traditional lecture approach format (e.g., conducting lectures primarily through delivery of theoretical material with minimal interaction)?

- (a) Always adhered
- (b) Often adhered
- (c) Sometimes adhered
- (d) Rarely adhered
- (e) Never adhered

Please explain your answer, e.g., indicate instances when the lecturer deviated from this format:

12. Did you notice whether the lecturer used methods or tools (e.g., interactive assignments, visual materials, gamification) that do not correspond to the traditional lecture approach? If yes, please describe these instances and their impact on your learning.

13. How often did you think that the lecturer's approach (e.g., material presentation, structure) was inconsistent or deviated from the lecture objectives?

- (a) Always
- (b) Often
- (c) Sometimes
- (d) Rarely
- (e) Never

Please explain your answer, e.g., provide specific examples:

14. How competent do you consider the lecturer to be in the subject of strategic management?

- (a) Very competent
- (b) Moderately competent
- (c) Neutral
- (d) Less competent

- (e) Not competent at all

Please explain what determined your assessment (e.g., knowledge of material, clarity of explanations):

15. If your academic performance in this subject was unsatisfactory, do you think the reason might be the lecturer's competence or their teaching approach? Please describe what factors affected your performance.

PART 4: SUMMARY QUESTIONS

16. In your opinion, what is the strongest aspect of the traditional lecture approach that distinguishes it from other methods (e.g., simulation-based learning)?

17. What would you recommend be changed or improved in the traditional lecture approach to make it more effective or interesting for you?

18. If you had the opportunity, would you change the lecturer's approach (e.g., more interaction, less theory)? Please describe what changes would be most beneficial for you. (Reverse question for verification)

INSTRUCTIONS FOR STUDENTS

- Please be honest and write detailed responses to open-ended questions so we can fully understand your experience.
- For closed-ended questions, select the option that best applies to you and, if possible, explain your choice in open responses.
- Your feedback is very important for improving teaching methods and the success of the research.

SIMULATION-BASED LEARNING ASSESSMENT QUESTIONNAIRE

(Directive, Reflective, and Engagement Mentoring Approaches)

1. How would you describe your overall experience with simulation-based learning using the (directive, reflective, or engagement approach)? Indicate what was most beneficial and least beneficial.

2. Describe specific situation(s) from the simulation that enhanced your motivation or engagement, and explain why it was significant.

3. Describe how insufficient knowledge of simulation mechanisms affected your learning outcomes. Provide one example.

4. Describe one example where a decision or action you made during the simulation corresponded to a theoretical concept in strategic management (e.g., SWOT, Porter's Five Forces, 4P).

5. What was the lecturer's support like during the simulation? Provide one example where their approach made decision-making easier or more difficult for you.

6. How difficult was it for you to learn the simulation?

(a) Very difficult
(b) Moderately difficult
(c) Neither difficult nor easy
(d) Moderately easy
(e) Very easy

7. To what extent did the simulation content correspond to strategic management topics (e.g., SWOT, Porter's Five Forces, PESTEL, BSG, 4P, SMART...)?

(a) Fully corresponded
(b) Largely corresponded
(c) Both corresponded and did not
(d) Partially corresponded
(e) Did not correspond at all

8. To what extent was the simulation content related to real-world strategic challenges?

(a) Very related
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

9. How useful will the knowledge gained from the simulation be in your practical work?

(a) Very useful
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

10. To what extent did the simulation increase your engagement and motivation in the learning process?

(a) Greatly increased
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

11. To what extent did the lecturer's actions (e.g., gamification, encouraging competition, active engagement) increase your engagement and motivation in the learning process?

(a) Greatly increased
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

12. To what extent did competition among classmates increase your motivation in the simulation process?

(a) Greatly increased

(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

13. How interesting was simulation-based learning for you?

(a) Very interesting
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

14. Did the lecturer explain the content of the pedagogical role and simulation objectives before starting the course?

Please explain how clear the explanation was or how its absence affected you:

15. To what extent did the lecturer adhere to one of the mentoring approaches (e.g., gamification, encouraging competition, active engagement)?

(a) Always adhered
(b) Often
(c) Sometimes
(d) Rarely
(e) Not at all

16. How competent do you consider the lecturer to be in strategic management and simulation facilitation?

(a) Very competent
(b) Moderately
(c) Neutral
(d) Less so
(e) Not at all

17. Did you notice whether the lecturer used methods (e.g., direct instructions) that did not correspond to the engagement approach?

18. If your academic performance was low, do you think the reason might be the lecturer's approach?

19. Did the lecturer conduct debriefing sessions on simulation results, and how important was it?

20. Do you think it would be beneficial to teach strategic management and other subjects using simulations?

Please provide one reason why you think so:

21. What would you recommend to improve simulation-based learning to make it more effective or interesting?

Please provide one specific suggestion:

Appendix C: Informed Consent Form

აღმოსავლეთ ევროპის უნივერსიტეტი

მონაწილის ინფორმაციის ფურცელი

(ტარიელ ელაშვილი)

ეს მოიცავს პროექტებს, რომლებიც გულისხმობს: ნებისმიერი ტიპის პერსონალური მონაცემების შეგროვებას; ხმის ჩაწერას; ფოკუს-ჯგუფებს; ექსპერიმენტებს/დაკვირვების კვლევებს, დაუცველ ჯგუფებს (მაგ., 18 წლამდე ასაკის პირები, შემეცნებითი დარღვევების მქონე მოზარდები და ა.შ.) და მგრძნობიარე თემებს (რაიმე ღრმად პირადი და შემაწუხებელი, ტაბუ, ინტრუზიული, სტიგმატიზებული, სექსუალური ხასიათის, არალეგალური და პოტენციურად საშიში, ეროვნული უსაფრთხოებისთვის საზიანო და ა.შ.).

სექცია 1

1. **პროექტის/კვლევის სათაური**

ინტერაქტიული სიმულაციური სწავლებისა და ტრადიციული მეთოდების ეფექტურობის შეფასება მაგისტრატურის სტუდენტების სასწავლო შედეგების მიხედვით დირექტიულიდან სტუდენტზე ორიენტირებულ სწავლების მასწავლებლის როლების მორგებით.

2. **მოწვევა**

   თქვენ მოწვეული ხართ კვლევაში მონაწილეობის მისაღებად. სანამ გადაწყვეტთ, მნიშვნელოვანია, გაიგოთ, რატომ ტარდება ეს კვლევა და რას გულისხმობს ის. გთხოვთ, ყურადღებით წაიკითხოთ ქვემოთ მოცემული ინფორმაცია და, საჭიროების შემთხვევაში, განიხილოთ სხვებთან. თუ რაიმე გაუგებარია ან გსურთ დამატებითი ინფორმაცია, მოგვმართეთ. დაუთმეთ დრო გადაწყვეტილების მისაღებად, გსურთ თუ არა მონაწილეობა. გმადლობთ, რომ წაიკითხეთ:

3. **რა არის კვლევის მიზანი?**

   კვლევის მიზანია შეაფასოს ინტერაქტიულ სიმულაციაზე დაფუძნებული სწავლის ეფექტურობა ტრადიციულ სწავლების მეთოდებთან შედარებით, მაგისტრატურის სტუდენტების სასწავლო შედეგების გაუმჯობესების თვალსაზრისით უმაღლეს განათლებაში. კვლევა იკვლევს ინსტრუქტორის

სხვადასხვა როლის — დირექტიული, ფასილიტატორული და სტუდენტზე ორიენტირებული — გავლენას სტუდენტთა ჩართულობაზე, მოტივაციასა და სასწავლო შედეგებზე, რაც უზრუნველყოფს ხედვას სწავლების პრაქტიკისა და სასწავლო გეგმის განვითარებისთვის. ეყრდნობა გამოცდილებაზე დაფუძნებული სწავლის თეორიას (კოლბი, 1984) და ანდრაგოგიას (ნოულსი, 1980), კვლევა იკვლევს, თუ როგორ განსხვავდება ზრდასრულ მოსწავლეებზე მორგებული სიმულაციები ტრადიციული მეთოდებისგან.

4. **მონაწილეთა შერჩევა**

მონაწილეები შეირჩევიან აღმოსავლეთ ევროპის უნივერსიტეტის განათლების მეცნიერებათა სამაგისტრო პროგრამის სტუდენტებიდან. გამოყენებული იქნება სტრატიფიცირებული შემთხვევითი შერჩევის მეთოდი, რათა უზრუნველყოფილ იქნას წარმომადგენლობა სხვადასხვა სასწავლო წლისა და სპეციალიზაციის მიხედვით. დაინტერესებული სტუდენტები ნებაყოფლობით დარეგისტრირდებიან და შეავსებენ წინასწარი შემოწმების კითხვარს, რათა შეგროვდეს დემოგრაფიული და საგანმანათლებლო მონაცემები (მაგ., ასაკი, სქესი, სწავლის სფერო, სტრატეგიული მენეჯმენტის ცოდნა). ეს უზრუნველყოფს დაბალანსებულ ნიმუშს ინტერაქტიულ სიმულაციაზე დაფუძნებული სწავლის (SBL) და ტრადიციული მეთოდების შესადარებლად სტუდენტთა მრავალფეროვანი პროფილების მიხედვით. **ჩართვის კრიტერიუმები:** განათლების ადმინისტრირების სამაგისტრო პროგრამაში ჩარიცხვა, სტრატეგიული მენეჯმენტის ძირითადი კონცეფციების ცოდნა (ფუნდამენტური გაგების უზრუნველსაყოფად) და ექსპერიმენტში მონაწილეობის სურვილი. **გამორიცხვის კრიტერიუმები:** სტუდენტები, რომლებსაც არ აქვთ სტრატეგიული მენეჯმენტის საბაზისო ცოდნა ან არ სურთ მონაწილეობა, გამოირიცხებიან კვლევის თანმიმდევრულობის შესანარჩუნებლად. **მონაწილეთა რაოდენობა:**

დაახლოებით 40 სამაგისტრო სტუდენტი ჩაირიცხება, დაყოფილი ოთხ ჯგუფად, თითოეულში 10 სტუდენტი: ერთი საკონტროლო ჯგუფი (ტრადიციული ლექციის მეთოდი) და სამი ექსპერიმენტული ჯგუფი (SBL

დირექტიული, ფასილიტატორული და სტუდენტზე ორიენტირებული ინსტრუქტორის როლებით).

5. **უნდა მივიღო მონაწილეობა?**

თქვენზეა დამოკიდებული, გადაწყვიტოთ, მიიღებთ თუ არა მონაწილეობას. თუ გადაწყვეტთ მონაწილეობას, მოგეცემათ ეს ინფორმაციის ფურცელი შესანახად და მოგეთხოვებათ თანხმობის ფორმის ხელმოწერა. ექსპერიმენტის პროცესში თქვენ თავისუფალი ხართ არჩევანში, ნებისმიერ დროს მიატოვოთ კვლევა მიზეზის მითითების გარეშე. თუ გადაწყვეტთ კვლევიდან გასვლას, გთხოვთ, რაც შეიძლება მალე აცნობოთ მკვლევარს მაქსიმალური ხელშეწყობისთვის. თუ რაიმე მიზეზით გსურთ თქვენი მონაცემების გაუქმება, გთხოვთ, დაუკავშირდეთ მკვლევარს თქვენი მონაწილეობიდან ერთი თვის განმავლობაში. ამ თარიღის შემდეგ, შესაძლოა, თქვენი ინდივიდუალური მონაცემების გაუქმება ვეღარ მოხერხდეს, რადგან შედეგები შეიძლება უკვე გამოქვეყნებული იყოს. თუმცა, ვინაიდან ყველა მონაცემი ანონიმურია, თქვენი ინდივიდუალური მონაცემები არავითარ შემთხვევაში არ იქნება იდენტიფიცირებადი.

6. **რა უნდა გავაკეთო?**

საკონტაქტო საათების რაოდენობა: 16 საათი

შეხვედრების ხანგრძლივობა და თითოეული სესია: კვირაში ორი შეხვედრა, თითოეული შეხვედრის ხანგრძლივობა — 2 საათი

კვლევის სავარაუდო დაწყებისა და დასრულების თარიღი: 23 მაისი, 2025 - 20 ივნისი, 2025

კვლევა ჩატარდება ოთხ განსხვავებულ ჯგუფთან, სხვადასხვა მიდგომის გამოყენებით. თითოეულ ჯგუფში სტუდენტთა რაოდენობა — 10. სამი ჯგუფი ისწავლის Capstone 2.0 ინტერაქტიული სიმულაციის ტექნოლოგიის გამოყენებით, ხოლო ერთი ჯგუფი — კლასიკური სალექციო მიდგომებით. კურსის დაწყებამდე გაიმართება საორიენტაციო შეხვედრა (სავარაუდო თარიღი: 15 მაისი), სადაც მონაწილეები მიიღებენ დეტალურ ინფორმაციას კურსის შესახებ, ასევე ჩააბარებენ წინასწარ ტესტს, ხოლო კურსის დასრულების შემდეგ მონაწილეები შეავსებენ საბოლოო ტესტს.

7. **რა არის მონაწილეობის შესაძლო სარგებელი?**

ვიმედოვნებთ, რომ კვლევაში მონაწილეობა თქვენთვის სასარგებლო იქნება. თუმცა, ეს არ შეიძლება გარანტირებული იყოს. სასწავლო კურსის ფარგლებში, Capstone 2.0 სიმულაციური თამაშის ტექნოლოგიით, თქვენ მოგეცემათ შესაძლებლობა, მართოთ ვირტუალური კომპანია, მიიღოთ გადაწყვეტილებები სხვადასხვა სფეროში და გაიგოთ თქვენი გადაწყვეტილებების შედეგები კონკურენტულ გარემოში. თქვენ იქნებით ინოვაციური კვლევის მონაწილე, რომელსაც შეუძლია გაამრავალფეროვნოს სწავლის პროცესი უმაღლეს განათლებაში. კურსის დასრულების შემდეგ, გადმოგეცემათ სერტიფიკატი ამერიკის სიმულაციის ცენტრის (Capsim) და აღმოსავლეთ ევროპის უნივერსიტეტის (EEU) მიერ.

8. **დარჩება თუ არა ჩემი მონაწილეობა ამ კვლევაში კონფიდენციალური?**

კვლევის გუნდმა განახორციელა რამდენიმე პროცედურა მონაწილეთა კონფიდენციალურობის დასაცავად. თქვენ მოგენიჭებათ მონაწილის კოდი, რომელიც ყოველთვის გამოყენებული იქნება თქვენ მიერ მოწოდებული მონაცემების იდენტიფიკაციისთვის. თქვენი სახელი ან სხვა პერსონალური ინფორმაცია არ იქნება დაკავშირებული თქვენს მონაცემებთან, მაგალითად, თქვენ მიერ ხელმოწერილი თანხმობის ფორმა ინახება თქვენი მონაცემებისგან განცალკევებით. ყველა ქაღალდის ჩანაწერი ინახება ჩაკეტილ კაბინეტში, რომელზეც წვდომა აქვს მხოლოდ კვლევის გუნდს, ხოლო ყველა ელექტრონული მონაცემი ინახება პაროლით დაცულ კომპიუტერზე.

9. **კვლევის შედეგების გამოყენება**

კვლევის შედეგები გამოყენებული იქნება აკადემიური დისერტაციის ნაწილად. შედეგები ასევე შეიძლება წარმოდგენილი იყოს კონფერენციებზე ან ჟურნალის სტატიებში. თუმცა, მონაცემებს გამოიყენებს მხოლოდ მკვლევარი და თქვენი პერსონალური ინფორმაცია ან მონაცემები არავითარ შემთხვევაში არ გამჟღავნდება.

10. **ეთიკის საკითხები**

კვლევამ მიიღო სრული ეთიკური ნებართვა კვლევის ეთიკის კომიტეტისგან, რომელმაც განიხილა კვლევა.

11. **საკონტაქტო მონაცემები დამატებითი ინფორმაციისთვის**

თუ გჭირდებათ დამატებითი ინფორმაცია, გაქვთ შეკითხვები ან გსურთ თქვენი მონაცემების გაუქმება, გთხოვთ, დაუკავშირდეთ: თარიელ ელაშვილი: Tariel.Elashvili@eeu.edu.ge (elashvilitariel@gmail.com) პროფესორ ემერიტუს პოლ გიბსი, დოქტორანტურის განათლების განვითარების ცენტრის დირექტორი, EEU (https://orcid.org/0000-0002-9773-3977) P.Gibbs@mdx.ac.uk

გმადლობთ, რომ დათანხმდით ამ კვლევაში მონაწილეობას. თქვენ (მონაწილე) უნდა შეინახოთ ეს „მონაწილის ინფორმაციისა და თანხმობის" ფურცელი, რადგან ის შეიცავს მნიშვნელოვან ინფორმაციას და კვლევის გუნდის საკონტაქტო დეტალებს.

East European University

Participant Information Sheet
(Tariel Elashvili)

This includes projects that involve: the collection of any type of personal data; voice recordings; focus groups; experiments/observation studies, vulnerable groups (e.g. anyone under 18 years old, adults with cognitive impairment, etc) and sensitive topics (anything deeply personal and distressing, taboo, intrusive, stigmatising, sexual in nature, illegal and potentially dangerous, harmful to national security, etc)

SECTION 1

1. Project/Study title

Assessing the Effectiveness of Interactive Simulation-Based Learning vs. Traditional Methods on Postgraduate Students' Learning Outcomes from Directive to Student-centred Teaching Roles

2. Invitation paragraph

You are being invited to take part in a research study. Before you decide, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.
Thank you for reading this:

3. What is the purpose of the study?

The purpose of this study is to assess the effectiveness of interactive simulation-based learning compared to traditional teaching methods in enhancing postgraduate students' learning outcomes in higher education. The research examines the impact of varying instructor roles—directive, facilitative, and student-centred—on student engagement, motivation, and learning outcomes, providing insights for instructional practices and curriculum development. Drawing on experiential learning theory (Kolb, 1984) and andragogy (Knowles, 1980), the study explores how simulations, tailored to adult learners, differ from traditional methods.

4. Why have I been chosen?

Participants will be recruited from postgraduate students in education scientists program at Easter European University. A stratified random sampling method will be used to ensure representation across academic years and specializations. Interested students will voluntarily register and complete a pre-screening questionnaire to collect demographic and educational data (e.g., age, gender, field of study, prior knowledge of strategic management). This ensures a balanced sample for comparing interactive simulation-based learning (SBL) with traditional methods across diverse student profiles.

Inclusion: Enrolled in a postgraduate program, basic knowledge of strategic management concepts (to ensure foundational understanding), and willingness to participate in the experiment.

Exclusion: Students lacking foundational knowledge of strategic management or unwilling to participate will be excluded to maintain study consistency.

Number of Participants:

Approximately 40 postgraduate students will be recruited, divided into four groups of 10 students each: one control group (traditional lecture method) and three experimental groups (SBL with directive, facilitative, and student-centred instructor roles).

5. Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. If you do decide to withdraw from the study then please inform the researcher as soon as possible, and they will facilitate your withdrawal. If, for any reason, you wish to withdraw your data please contact the researcher within a month of your participation. After this date it may not be possible to withdraw your individual data as the results may have already been published. However, as all data are anonymised, your individual data will not be identifiable in any way.

6. What will I have to do?

Number of contact hours: 16 hours

Duration of meetings and each session: Two meetings per week, each meeting duration – 2 hours

Estimated start and end date of studies: May 19, 2025 - June 14, 2025

The studies will be carried out with four different groups using different approaches. The number of students in each group – 10. 3 groups will study using Capstone 2.0 simulation game technology and 1 group – using classical approaches.
An orientation meeting will be held before the start of the course (estimated date: May 15), where participants will receive detailed information about the course, as well as write a pre-test, and after the course, participants will complete a post-test.

7. What are the possible benefits of taking part?

We hope that participating in the study will help you. However, this cannot be guaranteed. The information we get from this study may help us to…
As part of the training course, with the Capstone 2.0 simulation game technology, you will be given the opportunity to manage a virtual company, make decisions in various fields, and understand the results of your decisions in a competitive environment.
You will be a participant in innovative research that can diversify the learning process in higher education. Upon completion of the course, participants will be awarded a certificate from the American Simulation Center (Capsim) and the Eastern European University (EEU).

8. Will my taking part in this study be kept confidential?

The research team has put a number of procedures in place to protect the confidentiality of participants. You will be allocated a participant code that will always be used to identify any data you provide. Your name or other personal details will not be associated with your data, for example, the consent form that you sign will be kept separate from your data. All paper records will be stored in a locked filing cabinet, accessible only to the research team, and all electronic data will be stored on a password protected computer

9. What will happen to the results of the research study?

The results of the research study will be used as part of an academic dissertation. The results may also be presented at conferences or in journal articles. However, the data will only be used by members of the research team and at no point will your personal information or data be revealed.

10. Who has reviewed the study?

The study has received full ethical clearance from the Research Ethics Committee who reviewed the study.

11. Contact for further information

If you require further information, have any questions or would like to withdraw your data then please contact:
Tariel Elashvili Tariel.Elashvili@eeu.edu.ge (elashvilitariel@gmail.com)
Emeritus Professor Paul Gibbs, Director of the Center for Doctoral Education Development, EEU (https://orcid.org/0000-0002-9773-3977) P.Gibbs@mdx.ac.uk

Thank you for agreeing to take part in this study. You (the participant) should keep this "Participant Information with Consent" sheet since it contains important information and the research teams contact details.

CONSENT FORM

Please initial box

1. The study has been explained to me by Tariel Elashvili

2. I have been asked if I have any questions and all my questions have been answered so that I understand more about the study and how it will affect me.

3. I know that I do not have to take part and can stop at any time without giving a reason (2)

4. I agree to take part in the study on assessing the effectiveness of interactive simulation-based learning compared to traditional methods, involving pre/post-tests, surveys, and interviews/focus groups over 8 weeks

Name: Date:

Signature: Age:

1. A good summation of what is being asked should form the basis of informed consent. This could be used as standard text in the majority of cases. However, if, for example, it does not mention the production of transcripts and/or the future sharing of data with other academics etc, either through a formal archive or in some other way, these are serious omissions.

It is common practice to use separate information sheets to give information about the project and to gain consent. Generally, information about the study should be kept with the signed Consent Form

Remember, a signed consent form is not required for an anonymous questionnaire; instead the following statement is recommended to be included on the survey questionnaire:

"Completion of this questionnaire indicates consent."

თანხმობის ფორმა

გთხოვთ, ჩამოტანოთ ნაცვლები ყუთში

1. კვლევა ამიხსნეს ჩემთვის [გამომკვლევის სახელი მითითება] ☐

2. ჩემი კითხვები დავსვი, თუ რამე მქონდა, და ყველა კითხვას პასუხი მიღია. ვპასუხობ, რომ მესმის კვლევის შესახებ და ის, რასაც ჩემგან მოითხოვს ☐

3. მესმის, რომ არ ვალდებულმ მონაწილეობა მივიღო და ნებისმიერ დროს შემიძლია შევწყვიტო მიზეზის მითითების გარეშე ☐

4. ვთანხმობ მონაწილეობა მივიღო კვლევაში, რომელიც შეისწავლის ინტერაქტიული სიმულაციაზე დაფუძნებული სწავლების ეფექტურობას ტრადიციულ მეთოდებთან შედარებით, რომელიც მოიცავს წინასწარი ტესტირების, გამოკითხვებისა და ინტერვიუების განხორციელებას ☐

სახელი ______________________

თარიღი ______________________

ხელმოწერა ______________________

ასაკი ______________________

შენიშვნები:

კვლევის პროცესში ჩაწერილი აუდიო ან ვიდეო მასალა წარმოადგენს ინფორმირებული თანხმობის საფუძველს, რომელიც შეიძლება გამოყენებულ იქნეს სტანდარტულ ტექსტად ინფორმაციის უმეტესობისთვის. თუმცა, ძალიან კონკრეტული შემთხვევების გამო, არ მოიცავს ინფორმაციას ინდივიდუალური ვითარების შესახებ. ფორმალური მიზნებისთვის, მონაწილის არქივში ან სხვა ფორმით უნდა იყოს სერიოზული შეცდომები მოხსენება.

ზოგადი პრაქტიკაა ჩვენ ცალკე ინფორმაცია მოვითხოვოთ, რათა მივცეთ ინფორმაცია იმპერატორის პროექტისა და ზოგადი კონსენტის ფორმის ინფორმაციის შესახებ კვლევის შესახებ უნდა იყოს იურიდიული ფორმა აგენტისთან კონსენტის ფორმა.

კვლევისა და კონსენტის ფორმების მოთხოვნილებები მონაწილეთა მიერ არ არის საჭირო, შემდეგი გამოცხადება რეკომენდებულია ჩართვისთვის კვლევის კითხვარში: "კითხვების დასრულება რუბრიკით 'სხვა'".

Appendix D: IRB Approval Letter

EAST EUROPEAN UNIVERSITY

RESEARCH ETHICS APPROVAL FORM FOR EDUCATION DOCTORATES

Section I – Applicant's details

1. Details of applicant and student number

Tariel Elashvili, ID: 316297 (Tariel.Elashvili@eeu.edu.ge)

2. Faculty and programme title

Doctoral Educational Program in Education Sciences

3. Title of the research programme

Assessing the Effectiveness of Interactive Simulation-Based Learning vs. Traditional Methods on Postgraduate Students' Learning Outcomes from Directive to Student-centred Teaching Roles

4. Years of study

2022-2025

5. New or resubmission

New

6. Director of Studies and Supervisor details

Prof. Paul Gibbs, (P.Gibbs@mdx.ac.uk)

Section II - Details of proposed study

1. Full study title (this should be consistent in all documents relating to the research project

Assessing the Effectiveness of Interactive Simulation-Based Learning vs. Traditional Methods on Postgraduate Students' Learning Outcomes from Directive to Student-centred Teaching Roles

2. Proposed start date

October 1, 2024

3. Aims (please summarise and attach research proposal)

To evaluate the impact of interactive simulation-based learning (SBL) on postgraduate students' learning outcomes, engagement, and motivation compared to traditional methods, across directive, facilitative, and student-centred instructor roles.

4. Summary of research and rationale

This study compares SBL with traditional teaching methods to enhance postgraduate education, addressing gaps in pedagogical effectiveness and instructor role impacts.

5. Outline of research methods including type of anticipated research participants

Quantitative research design with pre/post-tests, Student Satisfaction Questionnaire. Participants are postgraduate students from education administration program, divided into one control group (traditional methods) and three experimental groups (SBL with varied instructor roles), totalling approximately 40 students.

6. Additional questions

- Will it be necessary for participants to take part in the study without their knowledge and consent at the time, or by deception: e.g., covert observation of people in non-public places?

NO.

- Will the research take place in a public space, (either physical or virtual: e.g., a town or meeting open to the public or public tweets, a public chat room) where participants might reasonably expect their behaviour to be observed?

NO.

Section III - Anonymity, confidentiality and consent (please attach proposed informed consent form).

1. Will you inform participants that their participation is voluntary and that they have a right to withdraw from the research, without penalty, at any time?

Yes.

2. Will you audio and/or visually record interviews, focus groups and/or observations? Will you receive written consent?

Yes, with written consent from participants.

3. Please provide details on how participants' anonymity will be maintained in the recordings and after transcribing.

There is no need to name the participants, only their results are of interest for the research.; recordings will be encrypted and stored securely

4. How will you ensure transcripts are checked and/or approved by the participant(s)?

Transcripts will be shared with participants for review and approval before analysis.

5. Describe the physical security arrangements for storing personal data during the study. Indicate how these arrangements conform to the requirements of the Government of Georgia.

Data will be stored on password-protected servers, complying with GDPR and institutional data protection policies.

6. Will you tell participants that their data will be treated confidentially and the limits of confidentiality and anonymity will be made clear in your Participant Information Sheet?

Yes, via the Participant Information Sheet.

7. Will participants/organisations providing access to data receive any incentives or payments for participating (other than reasonable reimbursements e.g., expenses and compensation for time)? If so what will these be?

They will receive quality knowledge and certificates from the Institution.

8. Will you need to provide a briefing to avoid any possible misconceptions and ensure that participants understand the research study both before and after the study?

Yes, briefings will occur before and after the study.

9. What impact of change on participants/organisations/ researchers or others directly or indirectly involved in the study may result from your research??

Minimal impact expected; potential benefits include improved learning outcomes, with no significant risks identified.

Section IV - Other issues

1. Does the research involve any ethical and/or legal issues not already covered that should be taken into consideration? If yes, how is this to be done?

No additional issues identified.

2. Does the research raise any risks to safety for you or others that would be greater than you would encounter in everyday life?

No.

3. Are there any conflicts of interest to be declared in relation to this research? If so, please declare them here.

NO.

Proposed informed consent form attached.

Student

Directors of Studies

Supervisor

May 14, 2025

VITA

Tariel Elashvili

Contact Information

Address: Saint Qetevan Dedofali ave. 47/49, Tbilisi, 0144, Georgia.
Phone: +995577195064
Email: elashvilitariel@gmail.com

Educational Background

2022-Present Doctoral Educational Program in Education Sciences, East European University, Tbilisi-Georgia;

2017-2019 Master of Education Administration, Georgian National University, Tbilisi-Georgia;

2002-2006 Bachelor of Power Engineering and Telecommunications, Georgian Technical University, Tbilisi-Georgia.

Professional Experience

2017-2018 Battalion Staff Leader, Georgian Air Forces;

2010-2017 Battery Commander, Georgian Air Forces;

2007-2010 Missile Firing Unit Commander, Georgian Air Forces;

Related Training and Experience

2016 Liaison Officer Course, Joint Force Training Centre, Bydgoszcz-Poland (www.jftc.nato.int);

2011 Aviation Captain's Carrier Course, David Aghmashenebeli National Defense

Academy, Tbilisi-Georgia;

2010 Aviation Basic Officer Leadership Course, United States Army Aviation Centre, Fort

Rucker, Alabama (http://www.armyflightschool.org/rucker.htm);

Tariel Elashvili	Conference proceedings	Examining a Teacher's roles and Responsibilities for Implementing Digital Gameplay in the Classroom In: Proceedings of the National Doctoral Scientific Conference 2023. Editors: Paul Gibbs and Giorgi Tavadze. East European University, Doctoral and Higher Education Research Development Center. Tbilisi. Georgia. S. 26-41.	2023
	Article in a peer-reviewed international journal indexed in ERIHPLUS	Exploring Simulation Pedagogy in Higher Education: A Narrative Review. In: The International Journal of development studies Vol. 6 No. 1 (2025)	2025 DOI: https://doi.org/10.63410/jds2025/07
	Article in a peer-reviewed international journal indexed in ERICH PLUS	Improving Human Capital Quality Through Simulation-Based Learning: A Quasi-Experimental Study in Georgia. In.: Ekonomisti-The international scientific and analytical, reviewed, printing and electronic journal of Paata Gugushvili Institute of Economics of Ivane Javakhishvili Tbilisi State University. Vol. XXII (1).	2026 See Notice of Publication No. 2/68 March 10, 2026