The European Educational Researcher
http://www.eu-er.com

The Impact of Lecturer Profiles on Digital Learning Habits in Higher Education

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Abstract. The increasing reliance on digital technologies in higher education has significantly transformed teaching and learning practices, highlighting the distinct roles of research- and teaching-oriented faculty in digital pedagogy. Research-oriented faculty contribute to active digital learning by promoting critical thinking, problem-solving, and collaborative activities. Their use of innovative digital tools encourages intellectual curiosity and engagement but may sometimes overwhelm students with complex materials. In contrast, teaching-oriented faculty excel in structuring passive digital learning through clear and accessible content delivery, fostering knowledge acquisition. However, their emphasis on structured approaches can limit opportunities for interactive engagement. This study investigates the impact of these contrasting academic profiles on students' learning experiences in digital environments. Using a mixed-methods approach, it explores how active and passive learning modes align with faculty strengths, shaping academic outcomes and student perceptions. Findings indicate that research-oriented faculty inspire scientific exploration and independent inquiry, while teaching-oriented faculty create supportive, accessible learning environments. Students value the strengths of both profiles but emphasize the need for a balanced approach that integrates structure with critical engagement. The study underscores the importance of professional development programs that encourage faculty to transcend traditional boundaries, equipping research-oriented faculty with pedagogical strategies and teaching-oriented faculty with interactive tools. Institutions must also adapt digital platforms to support diverse teaching styles, fostering inclusive and dynamic pedagogy. By bridging the gap between research and pedagogy, this study highlights the potential for hybrid approaches in the digital era, enabling faculty to optimize the benefits of digital learning for a diverse student body.

Keywords: Digital learning, learning experience, learning habits, pedagogy and research orientation, reading practices, teacher-lecturer.
DOI: https://doi.org/10.31757/euer.823

Introduction

The development of teaching and learning research, both globally and in Israel, has contributed to the recognition of academic teaching – by faculty, institutions, and policymakers alike—as a professional field requiring systematic training. To develop the "art" of teaching, researchers and lecturers require guidance and support (Schleicher, 2019; OECD, 2020). Teaching centers at academic institutions play a pivotal role in preparing academic faculty. These centers focus on developing knowledge about teaching and learning, as well as teaching, learning, and evaluation strategies and skills within the system of higher education. This is achieved through workshops addressing key issues in academic teaching, designed and led by Israel's top academic lecturers.

The challenges posed by the Covid-19 pandemic further emphasized the evolving role of academic lecturers in adapting to the digital era Moreover, in many countries worldwide the Covid-19 pandemic created the greatest distortion in the history of the education system, whereby a decision was made to shift to online learning in all subjects. In universities, and in fact in all "traditional" study spaces, many restrictions were applied that prevented students and faculty from attending campus. The shift to online learning in an emergency involves breaching barriers and challenges for faculty that require p r o m p t attention (Alelaimat et al., 2020; Rondan et al., 2020; Scull et al., 2020).

Studies illuminate the role of the lecturer in the digital era in teaching, and particularly the role of professional elements responsible for teaching and learning in academic institutions, primarily pedagogic aspects. The research (Rondan et al., 2020) also indicates the need for perceptual changes, among lecturers who must reexamine teaching and learning processes and adapt their role and responsibilities to the new opportunities afforded by technological tools. Research findings also show that the success of online learning requires different pedagogic approaches, rather than copying face-to-face teaching habits on a digital platform.

Teaching centres are responsible for preparing academic lecturers, particularly in adapting their methods to the digital era. They offer a range of training programs that aim to form a common foundation for all academic lecturers and that relate to an array of teaching aspects: pedagogic, digital, social-academic dimensions, while creating a shared language within each discipline (Schleicher, 2019; OECD, 2020).

The target population of the training programs are:

- All academic faculty members
- Experienced lecturers interested in improving or renewing their teaching techniques
- New lecturers inducted into the various types of higher education institutions
- PhD students at all institutions of higher education
- Teaching assistant

The current study examines the effect of the lecturer's profile as perceived by the students on each of the digital learning habits (active and non-active learning), taking into account the students' social and scholastic background characteristics. The research findings may affect the adjustment of training programs at institutions of higher education, while distinguishing between different "types" of lecturers.

Research literature

The Lecturer's Profile in an Era of Widespread Information

The profile of lecturers at institutions of higher education is an essential component of the academic system and of producing generations of research students. Lecturers convey knowledge, impart skills, and educate students to become graduates of a value-based academic system (Kainan, Asaf, Bezalel, Hoz, & Eilam, 2004). They stand at the front of knowledge and practice in their field of expertise; therefore, integrating information and communication technologies (ICT) in teaching and learning is an inseparable part of the lecturer's necessary skills. These competencies shape the evolving profile of lecturers, highlighting their dual role as subject experts and facilitators of digital-age learning.

Countries such as Australia, Britain, and the US (Schleicher, 2019) have determined that in order to train students for 21st century skills, lecturers must cultivate creativity. This can be achieved through explorative and problem-solving activities that involve cooperation and the use of information technologies. Lecturers are also encouraged to create experiential learning in high-tech environments, allow learners to take part in setting learning goals, and implement self-management and evaluation methods. Additionally, forming cooperative learning communities

enables the development of informational skills and the rapid adoption of technological innovations. Informational skills are at present an inseparable part of the competencies expected from learners, particularly in ICT-based learning environments.

The virtual revolution obliges teachers to adopt a new pedagogical DNA based on the following principles:
Changing the attitude to information, including sharing and exchanging information among the learners – In contrast to the archaic outlook based on the industrial revolution, whereby the lecturer conveys knowledge and learners receive it passively, modern pedagogy is based on the constructivist approach that sees learning as an active process of self-construction of knowledge and skills. The most important skills are problem solving and critical thinking. Suitable conditions for such learning are an environment that allows shared work, exposure to a variety of views and different ways of thinking, and self-awareness of the process of constructing knowledge. ICT-based teaching can facilitate the implementation of these skills via an array of technological tools such as databases, recorded lectures by experts, videos on YouTube, and the Moodle learning environment that shifts the class to an ICT-based setting and enables students to actively engage in a collaborative learning environment.

Perceptual change regarding the student's personal internet space – Digital literacy that exposes students to diverse information conducive to widening their range of knowledge, expanding and enriching learning processes, developing personal creative competencies, and enhancing their personality (Rotem & Peled, 2008). Studies indicate that online courses as part of teaching and learning can form a positive student attitude to the integration of technology in teaching. Their efficacy in integrating technological tools in teaching depends on active implementation of e-teaching during their studies, which is why technological foundations must exist throughout their studies (Bain & McNoaught, 2006; Bullock, 2004). The more students' technological knowledge is expanded by experiencing learning through ICT-based teaching, the stronger their ability to deal with technological innovations in the field (Stuhlmann & Taylor, 1998).

Diverse technological tools facilitate the implementation of pedagogical rules based on pre-technological theoretical principles. The theories described below can constitute an established theoretical basis for integrating technology in teaching and learning (Rotem & Peled, 2008).

Constructivist Theory

According to the constructivist theory (Parkins, 1998), learning is a process that involves building a systemic web of interrelated ideas. Students build their understanding on their pre-existing knowledge, which evolves through the interaction between prior understanding and newly encountered information. Schemas, namely the abstract representation of knowledge in the student's mind, develop through assimilation and adaptation. In assimilation, students see their environment through their conceptions, and new learning experiences generate a contradiction within existing schemas. The contradiction undermines the equilibrium within the old cognitive structure and provides internal motivation for change and for adapting the cognitive structure to the new circumstances (Piaget, 1992). Learning is in fact the self-organization and repeated internal construction of an old version of the student's knowledge.

The conclusion is that learning occurs through the students' activity, by repeatedly building their schemas. Active learners do not make do with listening and ownership of knowledge, rather they transform the information into structured knowledge by astutely choosing from among a range of information sources. The teacher's role includes encouraging learners to search for relevant material and providing information, clarifications, and suggestions. This fosters an environment that promotes inquisitiveness, and with opportunities to explore the links between new and old knowledge and to build a rich logic-based semantic network that will lead learners to develop creative ideas.

The constructivist theory can be realized in an online learning environment that has access to diverse information. Use of the web as a space for learning and research makes it possible to construct knowledge through searching, locating information in varied databases, and adapting the information sources judiciously. Learners who choose relevant information transform it into structured knowledge through an independent learning process (Rotem & Peled, 2008). The instructor's role is to train students in informational skills, to help them navigate internet databases, collect, sort, and process information skillfully and according to their needs. By processing the information through its translation, definition, and analysis, students are motivated to employ means of exploration and discovery.

The array of thinking skills encompassed by learning in an online environment are complex and oblige learners to operate levels of thinking that include analysis, evaluation, upgrading (Passig, 2000) and to produce understanding as a performative achievement (Perkins, 1998). To acquire good command of these skills there is need for facilitation based on high and active involvement of the supervisor. Tikochinsky (2002) found that the alienated image of the technological world is misleading. Students display a higher level of participation in courses where the facilitator is involved in the forum and takes some responsibility for the learning process than in courses with limited facilitator participation, and the more active the facilitator the more active the students. To ensure that e-Learning promotes learning in the spirit of constructivist theory, the course facilitator must organize the contents in an organized, logical, easily navigable way, and offer many opportunities for feedback.

An online learning environment such as Moodle realizes the principles of the constructivist approach by providing access to relevant information, assistance with collecting information, renewed organization and internal construction of the information via a route that helps the learner navigate the learning process, providing systematic information feedback by the facilitator, and personal accountability of the learner for the learning process.

The Theory of Multiple Intelligences

According to Gardner's (1993) theory, people have multiple intelligences that are largely autonomous and unquantifiable. Gardner defines intelligence as the ability to solve problems or to design products recognized as important in a social-cultural framework. The process of creating products involves constant dealing with problems and with their resolution; hence, the teacher must place activities and experiencing adapted to the individual's intelligence at the center of learning. This will help learners choose their fields of interest and develop

their unique creativity. Teachers who follow this theory use teaching strategies such as reading, drawing, music, and building flow charts to enliven the material and allow each student to learn optimally through their strongest types of intelligence. To form equal opportunities for children with different abilities, the teacher must relate to the various intelligences of the target population, evaluate personal skills and different thinking styles (Sternberg, 1985).

Gardner's educational conception is based on a toolbox that constitutes an "intelligence fair". This toolbox includes tools, methods, and materials that reflect the principles of multiple intelligences. The lecturer's task is to align the learner's unique abilities, interests, and skills with appropriate study programs and teaching approaches. Online learning activities can be adapted to learners with varied capabilities. An individual or group online task allows a wide range of activities. Learners can choose the materials and fields of interest that suit their abilities. E-teaching makes it possible to realize the theory of multiple intelligences by building subtasks within a common encompassing task, in compatibility with the varied capabilities of the learners (Rotem & Peled, 2008).

John Dewey's Social Philosophy

Dewey's (1933) theory focuses on the importance of the learner's social environment. The class where learning takes place is a social environment intended to allow learners to recognize their skills and realize them in a social context and through common activity. Generating a cooperative peer-learning environment raises the threshold of learners' ability to perform assignments and solve problems. When planning the educational activity, the teacher must strive for a social activity where members of the group influence each other under social supervision. The individual's learning process is enriched through interaction and observation. According to Bandura's (1965) social learning approach, observing others (modelling) raises learners' motivation. In Dewey's opinion, learners who are exposed to diverse perspectives, ideas, and questions of others, become accustomed to ask themselves and their peers questions that can develop reflective thinking tendencies such as open-mindedness, responsibility, and wholeheartedness (Shavitzky & Barth, 2000). Managing online forums with clear ideas, innovative proposals, and well-founded solutions is critical. This approach fosters reflective thinking, which Dewey identifies as central to intellectual development. Dewey's emphasis on reflective thinking aligns with the collaborative potential of online forums, where learners exchange ideas and engage in critical dialogue.

Rapid technological advancements and the increasing availability of digital tools have highlighted the urgency of rethinking teacher training methods in both the United States and Israel. As noted by Prof. Levin, chair of the Institute for Educational Management at Harvard University, during an international conference on teacher education in 2012, the traditional model of education – where all students are expected to learn the same material at the same time – fails to account for individual differences in learning styles and abilities. Levin emphasized the potential of developing personalized learning software tailored to how each student learns, which could revolutionize the educational landscape.

Similarly, Kasan, former President of the Levinsky College of Education, stressed the critical junction at which teacher training in Israel currently stands. He argued that while teacher training has historically provided the necessary knowledge, values, and ideology for Israel's educational system, the multifaceted changes in

technology, economics, biology, and data accessibility demand immediate adaptation of training programs to meet these new challenges. The ICT revolution requires teachers to change, as otherwise they might become disconnected from the students who live in a diverse and challenging virtual world characterized by rich and fascinating information. Operating an online learning environment cannot serve as an alternative to teachers. Realizing the full personal potential of each participant in the online environment requires the facilitator to receive consistent information on learners' progress and performance, receive updates on the weekly forum, and identify when learners need help and feedback to assist them in controlling the individual learning process. The application of Dewey's principles in e-Learning requires lecturers to adopt a dynamic profile, balancing technological proficiency with fostering reflective thinking among students

Alongside contents organized by subject on the course website, learners must know that during online studies the facilitator is always ready to assist them face-to-face as well. E-Learning facilitates more efficient learning, but this is predicated on the facilitator's mediation between the technology and the learning process. Therefore, the facilitator must be proficient in discerning use of ICT-based teaching environments.

The Learning Experiences

A meaningful learning experience goes beyond cognitive understanding – it integrates emotions, passion, and transformative processes (Passig, 2000; Parnafes & Weinstock, 2013). The attention-encounter-transformation model provides a framework for understanding these experiences and offers strategies for fostering them in educational settings. To achieve this, educators must recognize the importance of meaningful learning experiences and create conditions that encourage their emergence in the classroom. Years of research have shaped the concept of meaningful learning experiences, which are marked by a deep sense of purpose and curiosity. These moments ignite enthusiasm for exploring new ideas and often immerse learners so deeply in the process that their perception of the world shifts. Encounters with such content can spark creative thinking and inspire new actions, making meaningful learning experiences a powerful driver of personal and intellectual growth. Meaningful learning experiences appear in our life, but not often, and therefore they are precious. If we understand them, we can form opportunities for them to emerge more frequently. Such learning experiences are our growth engine.

The concept of meaningful learning, which has gained renewed attention in educational discourse, focuses on the cognitive construction of knowledge and the development of conceptual understanding, leading to transference – the ability to apply knowledge in diverse contexts (Ausubel, 1962). While meaningful learning emphasizes thorough and structured cognitive processes, it does not necessarily include emotional, experiential, or passionate elements

In contrast, meaningful learning experiences extend beyond cognition, incorporating emotional, subconscious, identity-related, and other dimensions that deeply enrich the learner's personal and intellectual growth.
Meaningful learning experiences echo Gad Yair's concept of "key experiences" described in his book *From Key Experiences to Turning Points* (2006). Both involve conscious awareness, high commitment to learning, and engagement with intrinsic dimensions of education. However, Yair focuses on one-time, life-changing events,

often described as a "Big Bang," while meaningful learning experiences are envisioned as consistent, almost routine occurrences within daily learning. Although less dramatic than a "Big Bang," these experiences remain valuable, fostering learner growth and enhancing the capacity to cultivate further meaningful learning moments. Meaningful learning experiences share similarities with Maslow's (1968) concept of "peak experiences," which integrate cognitive, emotional, and identity dimensions. While peak experiences are profound and often life-changing, meaningful learning experiences represent more frequent, modest instances of transformation that still unleash creativity and imbue the learning process with purpose.

The term "flow", coined by Csikszentmihályi (1990), is also close to meaningful learning experiences, although it does not necessarily relate to learning. The experience described by Csikszentmihályi is characterized by very high attention and concentration, so much so that the "self" disappears and is assimilated within the activity. Meaningful learning experiences include different facets of "flow".

Dewey (1938) and Whitehead (1962) emphasized the importance of connecting learned knowledge to the learner's world, breathing life into otherwise "inert" ideas. Whitehead describes meaningful learning as the moment when fragmented information transforms into a cohesive, inspirational whole, imbuing dry cognitive concepts with emotion and significance.

Reading Practices

A study by Suhua, Pelusa, and Matthew (2016) examined differences in reading habits between American and Chilean students. It focused on routine academic reading, extra-curricular reading, and reading on Facebook, as well as preferred reading materials. The study surveyed 1,265 students from the US and 2,076 students from Chile across all study disciplines. It found that American students devoted 4.94 hours a week to academic reading, 4.17 to extra-curricular reading, and 16.40 to reading on Facebook. For Chilean students the data were 3.07 hours and 14 hours, respectively.

The results show that for both the American and Chilean participants, online reading materials were the most popular type of reading material, followed by magazines/newspapers, graphic novels/comics books, best-sellers, and printed academic books not related to the students' major study discipline.

The advent of internet technologies has significantly reshaped students' reading habits, moving away from traditional practices toward digital platforms. College students increasingly engage with online content, with social media platforms like Facebook providing both social and academic accessibility. These platforms not only enhance learning experiences but also play a crucial role in shaping students' identities through shared interactions and collaborative learning opportunities.

On Students' Reading Practices

Research by Davidovitch, Yavich, and Druckman (2016) found that students' learning and reading practices are shaped by several factors, including social background, scholastic background in high school, features of

academic studies, and the influence of teachers, parents, and lecturers. The study focused on undergraduate students during the 2016/17 academic year.

The research findings by Davidovitch and Yossel-Eisenbach (2018) identified four learning patterns. Two are oriented towards digital technological means: technological learning habits and those that combine digital tools with traditional methods. The other two are traditionally-oriented: traditional learning habits and technology-resistant ones.

The learning habits with the highest mean significance for students were those where technology and social media disrupt studies. Students expressed strong agreement with the statement that social media negatively affects their academic performance and that digital learning habits are less significant compared to traditional ones. In other words, they placed relatively low value on digital learning.

The findings regarding shaping students' technological learning practices indicate a significant independent effect of one's environment—teachers, lecturers, and parents—on shaping these learning habits, beyond social background characteristics such as parents' education level, high school background, and academic experience. The greater the influence of teachers, lecturers, and parents, the greater the chance that students will embrace technological learning habits in their academic studies

Moreover, gender was found to have an independent effect on shaping technological learning practices, beyond social and scholastic background and the impact of the environment. It appears that male students tend to embrace these learning habits more than do female students. The findings regarding the combined effect of social, scholastic, and environmental background characteristics on shaping the students' learning habits reveal that the schooling of the student's parents', the type of academic institution, and the environment consisting of parents, teachers, and lecturers, have a significant independent effect on shaping the tendency to combined studies habits. University students more than college students tend to embrace combined learning habits. The higher the schooling of the student's parents, the greater the likelihood of embracing this learning habits, and it also rises with the influence of the environment.

Regarding the shaping of traditional learning habits among students, it appears to be influenced only by the social environment (parents, teachers, lecturers). Scholastic background characteristics and gender have no significant effect on shaping traditional learning habits.

The findings regarding technology-resistant learning habits show that gender, parents' schooling, and environmental impact each have a significant independent effect on shaping these habits. Men more than women tend to embrace them, and the chance of adoption rises with parents' schooling and the influence of the environment.

In summary, the development of all learning practices, without exception, is significantly influenced by one's surroundings – parents, teachers, and lecturers. Gender affects the formation of two seemingly contradictory

learning habits: technological habits and technology-resistant habits, both of which are more commonly adopted by male than female students. Scholastic background appears to have only a limited effect on the formation of learning habits. Regarding combined learning habits, an independent effect of the institution was observed, while other learning habits were not influenced by discipline or academic institution. The study revealed two reading practices characteristic of male students: traditional and online.

The findings indicate that the most prominent reading habit is online reading; students predominantly read online. Another finding shows that the development of traditional reading habits is associated with high religiosity and the influence of one's surroundings. However, these habits are not linked to scholastic or social background characteristics, such as gender or parents' schooling. In contrast, the adoption of online reading habits is significantly associated with gender and scholastic background, particularly the type of institution.

Male students tend to adopt online reading habits more frequently than female students, and the same trend is observed among university students compared to college students. Unlike traditional habits, these habits do not seem to be influenced by the environment, such as parents, teachers, and lecturers, or by religiosity.

Given the significant role of the environment in shaping students' learning and reading practices, a key question arises: how can lecturers encourage reading, which is a vital component of academic learning? How can they prepare students to engage with reading, as no academic research is possible without familiarity with prior studies, relevant theories, and leading researchers at both the local and international levels?

Following the research findings regarding the influence of the environment on students' learning and reading practices, this study examined how students perceive the lecturer's role. This was explored through students' responses to statements about their perceptions, summarized under the variable "traditional perception of the lecturer." This variable was developed based on a confirmatory factor analysis, which identified three key statements reflecting a traditional view of the lecturer's role: "Attendance of classes is the basis for success in a course," "Presenting all the study material to the students in the lecture is the basis for students' success in a course," and "One who lectures on students' reading practices in the digital era should prioritize presenting the material in a clear and accessible manner."

Students largely agreed that the lecturer's primary responsibility is to convey knowledge, with this statement receiving the highest mean score. They also emphasized the importance of face-to-face instruction for academic success. An analysis of the combined effects of all independent variables revealed that the type of institution has a significant independent impact on shaping the traditional perception of the lecturer, beyond the characteristics of discipline, environment, and social background. College students were found to hold a more traditional view of the lecturer's role than their university counterparts.

These findings align with others showing that university students are more likely than college students to use online reading methods and combined learning strategies. Additionally, the lecturer's role appears to hold greater significance for college students. This places college faculty in a unique position, requiring them to develop

teaching methods that effectively connect with students and shape their learning approaches. Many college students may have chosen this type of institution with the expectation of receiving personalized attention and supportive instruction. Consequently, college faculty must prioritize creating personalized and adaptive teaching strategies to meet these expectations.

For universities, the findings indicate that students tend to develop more independent reading habits and learning practices and hold a less traditional perception of the lecturer compared to college students. Nevertheless, academic faculty appear to play a significant role in influencing students' reading and learning practices. In light of these findings and the observed differences in habits and perceptions between college and university students, attention should be directed towards empowering lecturers and training them to guide students' learning habits. Additionally, it is important to develop tailored teaching and learning strategies for the two types of institutions to address their distinct educational goals and requirements.

In the digital era, where there are occasional attempts to create "teacher-proof" learning systems, it becomes evident that the most influential factor in education is the learning method, not the technology itself. Technology serves merely as a tool. The most effective facilitators of learning are teachers, who act as counselors, facilitators, and mediators between students and the vast array of information available in today's interconnected world. Teachers play a critical role in shaping collaborative learning processes that involve skills such as listening, analyzing, questioning, debating, agreeing, and making joint decisions. This approach not only enhances the assimilation of knowledge but also fosters meaningful dialogue among students.

Research findings (Davidovitch & Yossel-Eisenbach, 2018) highlight an important caution: students report that the use of technology can sometimes create a misleading impression of being "high-tech." However, not everything that is technologically advanced is pedagogically effective. New technologies have the potential to drive meaningful change, but their success depends on thoughtful and deliberate implementation. When used judiciously, they can enable academic institutions to maintain their leadership and excel in delivering personalized attention to students.

We are living in an era of rapid social and technological change, where the experience of academic studies has significantly evolved from that of the "traditional" university. To adapt to this dynamic environment, institutions must engage in strategic planning and innovation. Staying ahead in the ICT-driven educational landscape requires more than simply uploading materials to a website or transferring them from traditional classroom settings to online platforms.

From a pedagogical perspective, the findings by Davidovitch and Yossel-Eisenbach (2018) highlight the significant and independent role of lecturers in shaping students' learning habits. This influence spans all types of learning practices and student groups, emphasizing the importance of integrating reading as a fundamental component of academic instruction aimed at fostering research skills.

Lecturers should recognize that while students increasingly prefer reading from screens over printed materials, they have not entirely abandoned paper-based resources. This preference should be taken into account when designing courses, including their objectives, teaching methods, and evaluation strategies. Reading materials should balance mandatory and elective references to cater to diverse learning needs.

The researchers emphasized the importance of proactive efforts by faculty to improve teaching practices. These efforts should focus on enhancing students' reading skills within their disciplinary fields, fostering academic and critical reading abilities (such as judgment and evaluation), and improving academic writing skills. Additionally, lecturers should raise students' awareness of ethical standards, including key aspects of intellectual property law, proper citation practices, and the integration of traditional and digital reading methods. Facilitating access to academic texts through institutional information systems is an effective strategy for maintaining a dynamic and engaging learning process.

Digital Accessibility

The results highlight several significant associations: between users' digital literacy and their performance, as well as their effort-related expectations; between performance expectations and their intention to continue using Web 2.0 tools; and between their intention to continue and actual performance. These findings indicate that digital literacy plays a critical role in enabling effective use of e-Learning, which should be considered when evaluating its impact on user performance.

According to Bar-Zohar, Ben-Yehoshua & Avidov-Ungar (2022) in their article on professional digital measurement, evaluation, and development of digital skills in education based on the European Commission foundations (DigCompEdu), efficient and high-quality development programs for lecturers are viable if they meet these conditions:

- Are spread out and held over time, rather than on a one-time or concentrated basis.
- Cultivate group collaborations and professional networking.
- Promote active learning and academic research.
- Include practical experiencing, guidance by experts, and follow-up after the course.
- Require autonomous thinking, independence, and personalization.
- Encourage thinking outside the box, trial and error.
- Answer learners' needs and are not disconnected from the field.

The European Commission (2013) developed an innovative breakthrough tool for evaluating teachers' digital skills, i.e., the European Framework for the Digital Competence of Educators, or in short *DigCompEdu*. This is currently the leading tool in the field of measurement and evaluation of digital skills among teaching staff.
The review by Bar-Zohar, Ben-Yehoshua, and Avidov-Ungar (2022) offers an overview of the theoretical background in professional and digital professional development, specifically targeted towards its potential users, particularly lecturers. Additionally, the review highlights the distinctions between traditional in-class professional digital development and digital professional development conducted via online media and virtual environments. It also explores the concept of the "personalization of digital professional development" (Aagaard & Lund, 2020).

Personalization of Digital Professional Development

Personalization (or customization) is defined as the adaptation of a product, service, or process to the individuals, group, or target population anticipated to benefit from them. Use of this model is increasing in the online era and it is very common in fields such as artificial intelligence, media, research, learning, information management, branding, sales, literature, librarianship, futurism, advertising, search engine optimization, marketing, and customer service. Thanks to the potential multidisciplinary nature of personalization, it is capable of influencing the domains of society, education, technology, economics, politics, leisure, transportation, employment, and communication (Fergusson & Wild, 2021; Hinojo- Lucena et al., 2019; Sengottuvelan et al., 2017).

Finally, it seems that efficient assimilation of a system for measurement, evaluation, and development of digital skills among teaching staff depends on four main elements:

- Upgrading the level of workshops and courses for lecturers.
- Encouraging lecturers to assimilate and implement innovative and creative virtual teaching methods.
- Encouraging institutional and self-research of teaching.
- Developing an infrastructure and constructing progressive work spaces – or converting and upgrading old spaces.

Considering the research literature at large and the establishment of teaching as a profession in particular, this study examines what factors shape each of the digital learning habits of undergraduate students – active and non-active digital learning – with reference to the lecturer's profile, the learning experience, reading practices, digital accessibility, learning abilities, type of institution, and gender.

The study novelty is in enabling examination of the independent effect of the lecturer's profile as perceived by students on the two learning habits, while controlling for the student's social and scholastic background characteristics.

Research Questions

- What factors shape the active digital learning habits of undergraduate students considering the lecturer's profile, the learning experience, reading practices, digital accessibility, learning abilities, type of institution, and gender?

- What factors shape the non-active digital learning habits of undergraduate students considering the lecturer's profile, the learning experience, reading practices, digital accessibility, learning abilities, type of institution, and gender?

Method

Research Population

This study focused on undergraduate students during the 2022/23 academic year—a period marked by significant shifts in teaching and learning practices at higher education institutions due to the aftermath of the Covid-19 crisis. This period was characterized by the widespread use of e-teaching in academia, with students already familiar with digital learning from their high school and university experiences

Source of the Data

Data were collected in the 2022/23 academic year through a questionnaire distributed on social media platforms. The sample consisted of 181 college students (73% women and 27% men) and 161 university students (76% women and 24% men).

Method of Analysis

Statistical descriptive analysis: To examine the distribution of the research variables.

Tests for comparison of means: Paired Samples t test: To examine the average of the differences between pairs of observations, two samples that are dependent.

Linear regression: To examine the combined effect of the independent variables: digital learning experience, lecturer's profile, digital accessibility, environmental impact on reading practices-*"Reading habits"* , type of institution (college versus university), academic abilities, and gender, on shaping each of the two dependent variables: active digital learning and non active digital learning "*Passive digital learning*". The analysis included three models for each of the dependent variables. The first model included the main explanatory variables: lecturer's profile, learning experience, and Reading habits; the second model included, in addition, the control variable of digital accessibility. The third model included all the explanatory variables.

Factor analysis: Confirmatory factor analysis in the principal component method with Varimax rotation. A cluster of statements that presents a shared content world. The ranking is on a five-level scale ranging from "not important at all" (1) to "extremely important" (5), merged to form one variable in light of the factor analysis, by a weighted mean of the statements that converged into that content world.

Description of the Variables

Dependent variables: Active digital learning and Passive digital learning

Four items were subject to a factor analysis with Varimax rotation (Table 1). They were grouped into two factors which explained a total of 72% of total variance. We labelled the two factors "active digital learning" (Eigenvalue=1.565). "Passive digital *learning*" (Eigenvalue=1.343)

Table 1

Loading of the "Active Digital Learning" and "Passive Digital Learning" Questionnaire Items

component	*Item*	*Active digital learning*	*Passive digital learning*
1	I attend class with an open camera	.904	
	I participate in the lesson actively: ask questions and express my opinions	.625	
2	I am accustomed to learning by watching recordings		.768
	I am accustomed to learning on Zoom while at work		.780
KMO Measure of Sampling			
KMO Measure of Sampling			.535
Bartlett's Test of Sphericity		Approx. Chi-Square	342.122
		df	10
		Sig.	.000

Note. p<.001. Factor Loading were obtained using Confirmatory factor analysis in the principal component method with Varimax rotation. Factor Loading <.40 were suppressed. The values (.904,.625, etc.) represent factor loadings.

Independent Variables: The lecturer's profile. Two independent variables: "Research-oriented lecturer" and "Pedagogy-oriented lecturer".

Fifteen items were subject to a factor analysis with Varimax rotation (Table 2). They were grouped into two factors which explained a total of 64.224% of total variance. We labelled the two factors "research-oriented lecturer" (Eigenvalue=3.670). "Pedagogy-oriented lecturer" (Eigenvalue=6.605)

Table 2

Rotated Component Matrix Results: "Research-Oriented Lecturer" and "Pedagogy-Oriented Lecturer"

component	*Items*	*Research-oriented lecturer"*	*"Pedagogy-oriented lecturer"*
	Imparting practical knowledge that will facilitate professional functioning in the field of the course	.622	
	Covering most of the relevant knowledge in the course	.612	
1	Imparting research knowledge and research capabilities	.755	
	Developing the capability to learn and reason independently	.605	
	Imparting wide general knowledge	.777	
	Promoting the student's oral expression capabilities	.779	
	Teaching clearly and comprehensibly		.765
	Organising the course and the lesson		.843
	Simplifying the study material		.739
	Forming a pleasant learning atmosphere		.834
2	Allowing the students to ask questions and to answer them clearly and pleasantly		.763
	Adapting the level and nature of the teaching to the majority of the students		.597
	Maintaining order and discipline		.609
	Allowing students access and readily available communication with the lecturer: e-mail before and after the lesson		.812
	Conveying empathy and caring		.796

KMO Measure of Sampling

KMO Measure of Sampling		.941
Bartlett's Test of Sphericity	Approx. Chi-Square	3366.104
	df	120
	Sig.	.000

Note. p<.001. Note: Factor Loading were obtained using Confirmatory factor analysis in the principal component method with Varimax rotation. Factor Loading <.40 were suppressed. The values (.622, .612, etc.) represent factor loadings

The digital learning experience: The variable was ranked on a scale of 1-7 and measured with regard to the question: "On a scale of 1-7, how would you define your experience of remote learning, where 1 represents a negative experience and 7 a very positive experience.

Reading habits: impact of the environment on reading habits

Four items were subject to a factor analysis with Varimax rotation (Table 3). They were grouped into one factor which explained a total of 51.994% of total variance. We labelled the factor "Reading habits" (Eigenvalue=2.080).

Table 3

Rotated Component Matrix Results: "Reading Habits"

Component	*Items*	*"Reading habits"*
	My parents influenced my reading habits	.625
	The teachers at school or a specific teacher influenced my reading habits	.812
1	The lecturers at the university	.717
	Friends, acquaintances	.666
KMO Measure of Sampling		.705
Bartlett's Test of Sphericity	Approx. Chi-Square	220.307
	df	6
	Sig.	.000

Note. Factor Loading were obtained using Confirmatory factor analysis in the principal component method with Varimax rotation. Factor Loading <.40 were suppressed. The values (.625, .812, etc.) represent factor loadings. Higher values suggest a stronger association; p<.001

Independent Control Variables

Digital accessibility

Gender: Women (0) versus men (1).

Type of institution: (1) University (0) College

Academic abilities: The variable's values range from 1-7, where 1 represents a low value and 7 a high value. The measurement related to the question: "Compared to the academic level of other students in your program, how would you rank your academic level?".

Table 4

Rotated Component Matrix Results: "Digital Accessibility"

Component	*Items*	**"***Digital accessibility***"**
	I have a comfortable and quiet place at home for studying on Zoom	0.839
	I have access to high-speed internet	0.827
1	I have a computer that is at my disposal at all times	0.831
KMO Measure of Sampling		.703
Bartlett's Test of Sphericity	Approx. Chi-Square	264.729
	df	3
	Sig.	<.001

Note. Factor Loading were obtained using Confirmatory factor analysis in the principal component method with Varimax rotation. Factor Loading <.40 were suppressed. The values (.839, .827, etc.) represent factor loadings. Higher values suggest a stronger association; p<.001.

Findings

Description of the Features of Digital Learning

Table 5 below shows the result of a paired samples t-test conducted to compare students' perceptions of digital learning, active digital learning and passive digital learning. The findings (Table 5) show that the mean of the student's active digital learning is significantly higher, (M=3.2, SD=1.277) than the mean of the passive digital learning, (M=2.381, SD=1.06); t(321)=10.144, p<.001. The effect size was large (Cohen's d = 1.462).

Table 5

Results of a Paired Samples T-Test: Differences Between the Students' Perception of Active Digital Learning and Passive Digital Learning

Variable		*N*	*M(SD)*	*t(294)*	*Skewness*		*kurtosis*	
					Statistic	*S.E*	*Statistic*	*S.E*
Digital learning	Active digital learning	323	3.208(1.277)	10.144***	-.252	.136	-1.146	.271
	Passive digital learning	325	2.381(1.060)		.439	.135	-.515	.270

Note. ***p<.001.

Description of Features of the Lecturer's Profile

The findings in Table 6 below show that the students had a significant preference for pedagogy-oriented lecturers (M=4.121, SD=.852) than for research-oriented lecturers respectively, (M=3.647, SD=.879); t (294) = -11.633, p<.0001. The effect size was large (Cohen's d = .7).

Table 6

Paired Samples T-Test Results: Differences in Student Expectations From the Lecturer: Research-Oriented Lecturer, Pedagogy-Oriented Lecturer

Variable		N	M(SD)	t(294)	Skewness		kurtosis	
					Statistic	S.E	Statistic	S.E
Lecturer's profile	Research-oriented lecturer	313	3.647(.879)	-11.633***	-.411	.138	-.028	.275
	Pedagogy-oriented lecturer	305	4.121(.852)		-1.248	.140	1.146	.278

Note. ***p<.001.

Features of Students' Personal Background

The findings presented in Table 7 below reveal that the range of the digital accessibility variable ranges from -3.135 SD to +1.02 SD. The distribution of the digital learning experience variable is in the range of -1.92 SD to +1.33 SD. Regarding the students' reading habits: the range of the variable ranges from - 1.736 SD to +2.74 SD. The distribution of the students' academic abilities is in the range between: - 2.77 SD and +2.31 SD.

The widest range is found in the variables: academic abilities and reading habits, which indicates a large variation between the students in relation to these variables. The digital learning experience variable has the narrowest range, that is, a small variance of the students in relation to their digital learning experience.

The digital accessibility variable has the lowest negative minimum score, indicating that some students face significant challenges in the context of digital resources. Reading habits have the highest positive score, which indicates that some students have very high reading habits.

Table 7

Distribution of Research Variables – Standardised

Variable	*N*	*Minimum*	*Maximum*
Digital accessibility (Z score)	326	-3.135	1.02
Academic abilities (Z score)	336	-2.772	2.31
Reading habits (Z score)	326	-1.736	2.74
Digital learning experience (Z score)	332	-1.92	1.33

Note. The variables were standardised to reach an equal scale of answers.

Active Digital Learning Habits

Table 8 presents three regression models for predicting students' active digital learning habits. The first model includes the primary research variables: the lecturer's profile, the student's digital learning experience, and the student's reading habits. The second model incorporates the control variable of digital accessibility, aiming to account for its influence on active digital learning practices.

The third model examines the combined effect of all independent variables on active digital learning habits, while controlling for scholastic background variables such as study abilities, type of institution, and gender.

Table 8.

Regression Analysis of the Independent Variables Predicting the Active Digital Learning Habits

Variable	Model 1			Model 2			Model 3		
	B	*SE.B*	*β*	*B*	*SE.B*	*β*	*B*	*SE.B*	*β*
Research-oriented lecturer	.430	.112	.295***	.402	.11	.276***	.308	.101	.212***
pedagogy-oriented lecturer	-.017	.117	-.011	-.162	.120	-.107	.05	.114	.033
Digital learning experience	.092	.038	.134*	.026	.041	.038	.054	.038	.078
Reading habits	.2	.078	.144**	.224	.077	.161***	.148	.07	.106*
Digital accessibility				.368	.093	.265***	.362	.085	.261***
Institution (university)							-1.002	.136	-.391***
Academic abilities							.095	.06	.083
Gender (male)							-.094	.148	-.032
R^2		.144			.188			.333	
F change		11.776***			12.932***			17.257***	

*p<.05 **p<.01 ***p<.001

The findings in Table 8 indicate that the lecturer's profile, the student's learning experience, and the student's reading habits account for 14.4% of the variance in active digital learning (Model 1). The results further reveal that a research-oriented lecturer has a significant positive independent effect on active digital learning habits, β=.295, p<.001, beyond the preference for a pedagogy-oriented lecturer, the student's learning experience, and reading habits. Conversely, the preference for a pedagogy-oriented lecturer does not have a significant effect on students' active digital learning habits, β= -.011, n.s. The findings also show that a positive learning experience is

significantly associated with active digital learning habits, β=.134, p<.05, as is a higher environmental impact on reading habits, β=.144, p<.01.

Incorporating the variable of "digital accessibility" added 4.4% to the explained variance in active learning. Greater digital accessibility among students was significantly associated with a stronger inclination toward active digital learning habits, independent of the lecturer's profile, learning experience, and reading habits . Notably, the inclusion of this variable did not alter the significant independent effects of the research-oriented lecturer profile or reading habits. However, when digital accessibility was accounted for, the effect of learning experience on active digital learning habits became insignificant, β=.038, n.s. This suggests that digital accessibility mediates the association between the student's learning experience and their inclination toward active digital learning habits.

The third model demonstrates that the addition of scholastic background variables (type of institution and academic abilities) and gender increased the explained variance in active learning by an additional 14.5%, bringing the total explanatory power of all independent variables to 33.3%.

The third model confirms that the significant positive independent effect of the research-oriented lecturer profile remained consistent, β=.212, p<.001. Similarly, the effects of reading practices (β=.106, p<.05) and digital accessibility (β=.261, p<.001) remained stable. The findings further indicate that college students show a stronger tendency toward active digital learning habits compared to university students, β=-.391, p<.001. However, academic abilities and gender were not found to significantly influence active digital learning habits.

Shaping Passive Digital Learning Habits Among Undergraduate Students

Table 9 below presents three regression models for predicting students' non-active digital learning habits. The first model includes the main research variables of lecturer's profile, student's digital learning experience, and student's reading habits. The second model includes the control variable of digital accessibility, to eliminate the influence of student's digital accessibility on shaping habits of non-active digital learning.

The third model examines the combined effect of all independent variables on passive digital learning habits, while controlling for scholastic background variables, including academic abilities, type of institution, and gender.

Table 9

Regression Models for Predicting Students' Passive Digital Learning Habits

Variable	Model 1			Model 2			Model 3		
	B	*SE B*	*β*	*B*	*SE.B*	*β*	*B*	*SE.B*	*β*
Research-oriented lecturer	.139	.094	.114	.124	.094	.102	*.097*	*.094*	*.08*
Pedagogy-oriented lecturer	-.254	.098	-2*	-.306	.102	-.242***	*-.231*	*.106*	*-.183**
Digital learning experience	.138	.032	.24***	.110	.035	.192***	*.122*	*.035*	*.212****
Reading habits	.294	.065	.252***	.299	.066	.257***	*.275*	*.066*	*.236****
Digital accessibility				.143	.079	.123	*.142*	*.079*	*.123*
Institution (university)							*-.339*	*.127*	*-.159****
Academic abilities							*.003*	*.056*	*.003*
Gender (male)							*-.054*	*.138*	*-.022*
R^2		.136			.141			*.163*	
F change		11.077***			9.177***			*6.757****	

*p<.05 **p<.01 ***p<.001

Table 9 shows that a pedagogy-oriented lecturer profile is significantly negatively associated with passive digital learning habits (β= -.2, p<.05), whereas a research-oriented lecturer profile has no significant association with shaping passive digital learning habits (β=.114, n.s). Additionally, both digital learning experience (β=.24, p<.001) and reading habits (β=.252, p<.001) demonstrate a significant positive association with passive digital learning habits. Adding the control variable of digital accessibility (Model 2) did not change the effects of the variables compared to Model 1 and contributed less than half a percentage to explaining the variance. The research model that includes all variables (Model 3) explained 16.3% of the variance in passive digital learning habits. Adding the variables of scholastic background and gender contributed an additional 2.3% to explaining the variance in passive digital learning. The findings from Model 3 indicate that including scholastic background and gender did not alter the effects of the lecturer's profile, learning experience, reading habits, or digital accessibility.

After accounting for scholastic background and gender, the "research-oriented" lecturer profile showed no significant effect on shaping non-active learning habits (β=.08, n.s), whereas the "pedagogy -oriented lecturer" profile remained significantly negatively associated with passive learning habits (β=-.183, p<.05). Both learning experience (β=.212, p<.001) and reading habits (β=.236, p<.001) continued to have a significant positive independent effect on shaping non-active learning habits.

Model 3 also shows that college students are significantly more inclined than university students to adopt non-active digital learning habits (β=-.159, p<.001). However, academic abilities (β=.003, n.s) and gender (β=-.0022, n.s) were not significantly associated with shaping passive digital learning habits.

Summary of the Findings

The findings indicate that the lecturer's profile plays a key role in shaping active digital learning habits. A research-oriented lecturer demonstrates a significant independent effect on active digital learning habits, beyond all other explanatory variables. Conversely, a "pedagogy-oriented" lecturer profile shows no significant effect on shaping students' active digital learning habits.

A positive digital learning experience is significantly associated with shaping digital learning habits. However, controlling for the "digital accessibility" variable nullified this effect, suggesting that digital accessibility mediates the relationship between a student's learning experience and their active digital learning habits.

Digital accessibility itself has a significant independent effect on shaping active digital learning habits. Greater accessibility is positively correlated with a stronger inclination toward active learning, beyond all other explanatory variables. Similarly, students' reading practices are positively associated with shaping active learning habits.

Academic abilities and gender were not significantly associated with shaping active digital learning habits. However, institutional background showed a significant effect, as college students demonstrated a stronger tendency toward active digital learning habits compared to university students.

Shaping Passive Digital Learning Habits: Combined Effect of Lecturer Profile, Learning Experience, Reading Practices, Digital Accessibility, Academic Abilities, Type of Institution, and Gender

The findings reveal that a "pedagogy-oriented" lecturer profile has a significant negative effect on shaping non-active digital learning habits, beyond all other variables. Specifically, the more students perceive the lecturer as pedagogy-oriented, the lower their inclination toward non-active learning habits. In contrast, a "research-oriented" lecturer profile does not significantly influence non-active learning habits, though it has a significant independent effect on active digital learning habits.

Learning experience demonstrates a significant independent effect on shaping non-active digital learning habits but has no significant effect on active digital learning when controlling for all other variables. Adding digital

accessibility as a control variable did not alter the influence of the explanatory variables and had no significant effect on shaping non-active digital learning habits, in contrast to its positive effect on active digital learning habits. Moreover, the contribution of digital accessibility to explaining the variance in non-active digital learning habits was less than 0.5%.

It is evident that college students are significantly more inclined toward non-active digital learning habits compared to university students. However, academic abilities and gender were not significantly associated with shaping either type of digital learning habit.

Discussion

In the post-Covid era, digital learning has become firmly integrated into higher education, manifesting in two primary forms: active digital learning, marked by active student engagement, and non-active digital learning, characterized by passivity. Research (Aagaard & Lund, 2020) suggests that active learning promotes effectiveness, empowers students, and develops their abilities (Fergusson & Wild, 2021). This type of learning is closely linked to the lecturer's profile (Hinojo-Lucena et al., 2019).

The findings of this study align with prior research emphasizing the central role of lecturers in shaping active learning, even in higher education. Furthermore, the study reveals that students' perceptions of their lecturer's profile influence their approach to digital learning, whether active or non-active. This underscores the enduring importance of a pedagogy-oriented lecturer in guiding learning behaviors at advanced educational stages.

The study also highlights that learning experience has no independent effect on active learning once the influence of digital accessibility is accounted for. In contrast, digital accessibility positively impacts active learning beyond all other variables. This finding is notable because, unlike in high school, where learning experience plays a central role, higher education relies more on digital accessibility to foster meaningful active learning.

Conversely, for non-active digital learning, the study's findings on learning experience align with research on elementary and secondary education (Sengottuvelan et al., 2017), where learning experience was linked to meaningful learning. In higher education, non-active digital learning is strongly tied to learning experience, even more so than to digital accessibility, and is negatively associated with perceiving the lecturer as pedagogy-oriented.

This finding suggests that perceiving the lecturer as pedagogy-oriented correlates with higher student participation and an increased inclination toward active learning. It may also indicate that pedagogy-oriented lecturers aim to engage students in meaningful learning, aligning their teaching approach with research-oriented methods.

This perspective underscores that non-active learning is frequently regarded as traditional learning, which may not correspond to the evolving profile of higher education lecturers. This observation corresponds with research on secondary education (Aagaard & Lund, 2020), which highlights the vital role of teachers in shaping learning within the digital age. Therefore, transitioning to higher education does not alter the fundamental educational principle of the lecturer's central role in the learning process and the importance of fostering active digital learning.

This observation corresponds with research on secondary education (Aagaard & Lund, 2020), which highlights the vital role of teachers in shaping learning within the digital age. Therefore, transitioning to higher education does not alter the fundamental educational principle of the lecturer's central role in the learning process and the importance of fostering active digital learning.

The type of institution – whether colleges or universities – seems to play a significant role in shaping learning habits, beyond all other variables. This suggests that teaching centers operate differently across these institutions. Combined with the findings on the lecturer's pivotal role, this underscores the critical importance of teaching centers in preparing and supporting faculty for effective teaching in higher education.

Conclusions

The findings of this study underscore the pivotal role of the lecturer's profile, as perceived by students, in shaping their digital learning habits. While the research-oriented profile strongly influences active digital learning, the pedagogy-oriented profile exerts a distinct and negative impact on non-active digital learning habits. These results highlight the necessity of distinguishing between these profiles when designing training programs for academic lecturers.

Moreover, digital accessibility emerged as a critical enabler of active learning, mediating the effects of students' learning experiences. This underscores the importance of institutional investments in technological infrastructure to foster meaningful learning outcomes. Conversely, the study confirms that non-active digital learning habits are more strongly linked to learning experiences, emphasizing the enduring importance of student-centered teaching practices.

Institutional differences, such as those between colleges and universities, reveal the need for tailored pedagogical strategies that address unique educational goals and student expectations. College faculty, in particular, play a crucial role in fostering personalized learning environments that resonate with students' needs.

This study contributes to the growing body of literature on digital learning by providing evidence of the distinct roles of lecturers and institutional contexts in shaping student engagement. It also calls for a reevaluation of academic faculty training, encouraging the integration of both research-oriented and pedagogy-oriented approaches to adapt to the demands of the digital era.

Future research could explore longitudinal changes in these habits as digital learning continues to evolve, including the impact of emerging technologies such as artificial intelligence and adaptive learning systems. By doing so, institutions of higher education can better prepare faculty to meet the challenges and opportunities of a rapidly changing educational landscape.

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Please Cite: Yossel-Eisenbach, Y., Gerkerova, A. & Davidovitch, N. (2025). The impact of lecturer profiles on digital learning habits in higher education. *The European Educational Researcher, 8*(2), 31-58. https://doi.org/10.31757/euer.823

Conflict of Interest: The authors declare no competing interests.

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Data Availability Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics Statement: The study was approved by the Ethics Committee of Ariel University, Israel (Approval Number: AU-SOC-ND-20220529).

Author Contributions: Yael Yossel-Eisenbach conceptualized the study and coordinated data collection. Aleksandra Gerkerova contributed to the literature review and analysis of the findings. Nitza Davidovitch supervised the research process and contributed to the writing and revision of the manuscript. All authors reviewed and approved the final version of the article.

Received: February 17, 2025 ▪ Accepted: May 11, 2025