# Langerian Socio-Cognitive Approach to Learning in Universities: A Scoping Literature Review

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Abstract

*Background*: Universities emphasize the importance of students' mental health, engagement, and soft skills, such as critical thinking, communication, collaboration, creativity, and self-management.

*Objectives*: The review aims to explore how the Langerin socio-cognitive approach to learning (also known as mindful learning) is defined and applied in the context of universities and to suggest an agenda for further research of mindful learning in this sphere.

*Design/methodology/approach*: The study presents a scoping review based on web scraping conducted in Litmaps ($k$ = 82), and topic modeling using the Python programming language ($k$ = 77).

*Findings*: Three key themes were identified: 1) the concept of mindful learning; 2) the role of mindful learning in psychological well-being; 3) the role of mindful learning in the development of soft skills. The results suggest that mindful learning is presented in the literature as a way to support students' control over the learning process, improve psychological well-being, raise students' intrinsic motivation to learning, foster individual proactivity, and develop socio-cognitive competencies.

*Originality/value*: To our knowledge, no other study conducted a scoping literature review on the Langerian socio-cognitive approach to learning, thus distinguishing it from other areas of research often using similar terminology (e.g. mindfulness). We propose and successfully implement a new approach to conducting a scoping literature review by using web-scraping and topic modeling.

Keywords

Langerian mindfulness, mindful learning, Litmaps, Python, scoping literature review, AI research tools, socio-cognitive mindfulness, LMS, MMS, web scraping, text mining

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## 1. Introduction: Research Background

For the first two decades of this millennium, psychologicalwell-being and soft skills have become a major focus of educational policy worldwide [Tuomi, 2022]. Proposedly, these skills improve a person's ability to adapt acquired knowledge to real-life situations, including those involving uncertainty, and to engage in forming a preferred educational trajectory [Kazakova, Tarkhanova, 2018].

In the Russian context, the transition to competency-based educational outcomes has increased interest in the learning-driven and learner-centered approach, rather than the instruction-based, teacher-centered method [Moafian et al., 2019; Scheurs, Dumbraveanu, 2014]. However, introducing soft skills as important outcomes of an educational process often meets resistance from both lecturers and students, who are used to the dominance of professional (hard) skills in education. In addition, students are often reluctant to utilize (the higher level of) autonomy provided within the learner-centered approach [Churakova, 2023; Romanova, 2021], while the new reality calls for proactivity [Sorokin, 2022].

The Langerian approach to learning is a promising way to undergo such transition in a smoother way. The approach is named after Ellen Langer, a professor of social psychology at Harvard University. She drew attention to the state of mindlessness [Langer, 2000], in which individuals often act as if they were programmed to behave in a certain way. Such a state may result from implicit cognitive commitments or a desire to repetitively apply previously learned frameworks, disregarding the contextual specifics of the moment. The opposite state was referred to as mindfulness, the state of noticing and producing novelty, staying cognitively engaged and flexible.

Research on Langerian mindfulness in the Russian learning context is quite scarce. Belinskaya & Djuraeva [2021] adapted the Langerian mindfulness scale, and Macepuro, Esipenko, & Terekhina [2021] investigated the suitability of mindfulness-based interventions for reducing mathematics anxiety in school and increasing interest in Science, Technology, Engineering and Mathematics (STEM) subjects. We did not find any relevant methodologically focused studies in higher education settings in Russia. At the same time, there is a growing interest in this approach in massive open online courses (MOOCs) [Fyodorova, Seit-yaya, 2023][1]. Significantly more research

[1] https://school.kontur.ru/courses/1062-kak-nauchitsya-uchitsya; https://theoryandpractice.ru/posts/18953-osoznannoe-obuchenie-kak-nachat-uchitsya-i-ne-brosit-na-polputi

addresses Social-Emotional Learning (SEL), focusing on development of self-awareness, self-management, social awareness, relationship, and decision-making skills [Sefai, 2020][2]. A number of studies [Feuerborn, Gueldner, 2019; Lawlor, 2016] point to the similarity of the goals of SEL and mindful learning, suggesting that they are complementary, which may indirectly indicate a potential interest in mindful learning as well.

Mindful learning is a promising approach for supporting the psychological well-being of both students and academic staff. The COVID-19 pandemic has adversely affected students' well-being [Ebrahim et al., 2021; Maqsood et al., 2021]. The viral threat, the measures taken to reduce social interaction and the shift to remote learning, along with economic and political instability, have increased the likelihood of psychological and physical health deterioration [Ebrahim et al., 2021]. The transition to remote learning has negatively impacted learners' motivation due to the low level of self-discipline, intolerance to technical difficulties in organizing the learning process, excessive multitasking, and decreasing attentiveness [Maqsood et al., 2021]. These challenges have prompted universities to reconsider traditional approaches to learning and introduce programs that can enhance psychological well-being, intrinsic motivation, attentiveness, and concentration for both students and instructors. Mindful learning, based on the Langerian concept of mindfulness, has potential for achieving these goals [Hassed, Chambers, 2014].

The aim of this study is to explore the literature on the Langerian approach to learning ("mindful learning") and identify its prospects in responding to the challenges of modern higher education. It is important to distinguish between the two leading schools of mindfulness research: socio-cognitive mindfulness advanced by Langer and her associates, and meditative mindfulness developed by Kabat-Zinn and his colleagues [Kabat-Zinn, 2003; Pagnini, Philips, 2015]. However, this distinction is hard to achieve when conducting a literature review as numerous studies refer to mindfulness without clearly identifying the approach and its theoretical grounds. In education, it is also important to differentiate between mindful learning (based on the Langerian mindfulness) and practicing mindfulness in the meditative approach. Other concepts, such as SEL, self-directed learning, also have a lot in common with mindful learning. The plurality of approaches and common terminology make it complicated to trace the research findings in a particular area or within a particular approach. To address this problem, we utilize the scoping review methodology rather than narrative or systematic reviewing [Tricco et al., 2018]. To direct the research process towards mindful learning, we propose the following research questions:

[2] https://asi.ru/news/85145/?ysclid=lgbunkkjuw635441835

RQ1: What is the possible agenda for further research of mindful learning in universities?

RQ2: How can we differentiate Langerian mindfulness and mindful learning from alternative approaches?

The research relevance lies in the need for learning approaches which could foster individual proactiveness and boost relevant soft skills, improve well-being, and raise students' intrinsic motivation. The Langerian socio-cognitive approach to learning is a promising way to deal with the highlighted above challenges, understudied by Russian researchers. The present study is the first scoping literature review on the Langerian socio-cognitive approach to learning in the context of higher education. Another element of novelty of this research is in its methodology as it is conducted by using Artificial Intelligence (AI) tools and text mining techniques, namely, topic modeling algorithms.

The paper has the following structure. The first section explains the methodology, including the process of data collection, through Litmaps, and data analysis through text mining in Python, followed by the scoping literature review. The following section highlights results and findings, providing answers to the research questions. We finish with discussion and conclusion.

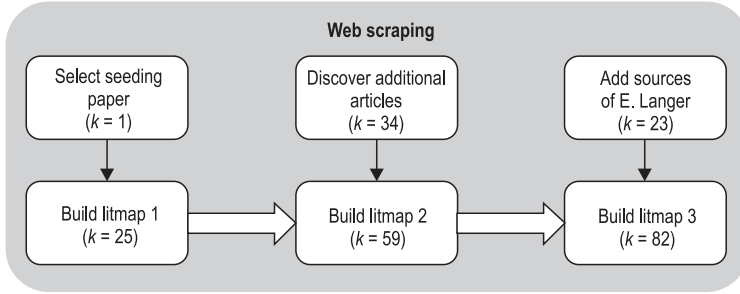
## 2. Methodology

This paper presents the process and results of a scoping literature review, conducted via web scraping and text mining, utilizing topic modeling methodology. Scoping review is a comparatively novel method, suitable for a broad list of objectives [Kulakova, Nastausheva, Kondratjeva, 2021]. It helps to identify the types of available data, commonly applied methods, key concepts, constructs and factors in a chosen topic and context, as well as current research gaps [Munn et al., 2018]. It might precede other types of review, such as the systematic review, or could be conducted when the latter is not applicable, as in the case of the current study: research about mindful learning relies on emerging evidence, causing a lack of more specific research questions required for a systematic review; the key words are used in other fields of study with different meanings. The scoping review requires following the protocol, Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews Checklist (PRISMA-ScR), which consisits of 22 items [Tricco et al., 2018] (Appendix 1). The scoping review has already been applied to research into mindfulness (see: [Kee et al., 2019]), however, without focusing on mindful learning in the context of higher education.

### 2.1. Data collection strategy

For data collection, we conducted web scraping in the Litmaps software. It resulted in a selection of 82 relevant sources out of 4 119 361 publications provided by the Semantic Scholar database for the input "mindful learning" (Fig. 1).

Fig. 1. **Steps of data collection**




The Litmaps tools provide valuable assistance due to three reasons. First, they allow for an exploratory search of relevant academic sources, using several parameters, such as keywords, authors, DOI, and seeding papers. The software conducts the search, either using the Semantic Scholar search engine or its own database, both of which are AI-powered tools. The results of the search can be filtered, saved online, or imported for further use. Second, all preselected papers can be visualized as a dynamic network — a Litmap — with a highlighted connection between them. For this purpose, one can also refer to an alternative or additional preselected list of papers imported by the user. All articles on this Litmap can be arranged according to two out of six parameters: cited by, references, date, cluster, momentum, and map relevance. Third, the generated Litmap can serve as a basis for discovering other relevant articles that could have been missed within an alternative search strategy.

*Step 1: Select seeding paper.* In our research strategy, we started with a seeding paper of the pioneer author, Dr. Ellen Langer [Langer et al., 1989], who has been studying the socio-cognitive approach to learning since the early 1970s.

The title 'mindfulness' in 'mindful learning' is used by Langer, in the Western secular meaning, as an alternative to the mindless state. Mindfulness implies that an "individual actively engages in reconstructing the environment through creating new categories or distinctions, thus directing attention to new contextual cues that may be consciously controlled or manipulated as appropriate" [Langer et al., 1989. P. 4]. This conceptualization differentiates the Langerian methods in learning from the Western meditative secular [Kabat-Zinn, 2003] or Eastern spiritual approaches, also studied by psychologists [Kozlov, 2016]. They refer to similar concepts, and the latter two approaches are more widely spread among Russian researchers [Osin, Turilina, 2020]. This is why Litmaps (and scoping review) was of high value; it allowed us to start the research with a seeding paper without being misguided by terms which were common to several fields but actually referred to different phenomena, while the most widely ap-

plied strategy for searching relevant articles is through using keywords ("mindful learning" in our case).

Another important challenge is that Langer contributed not only to the educational field of research: being mindful can improve productivity, innovation, perceived attractiveness, work output, and the ability to recognize and avert threats; it can enhance relationships by making individuals more authentic, trustworthy, and less judgmental; it can lead to a healthier and happier existence when adopted as a personal norm [Langer, 2016a]. Thus, for the role of seeding paper, we decided to select an article by Ellen Langer, the focus of which was turned to education — "Conditional teaching and mindful learning: the role of uncertainty in education" [Langer et al., 1989].

*Step 2: Build Litmaps.* The initial search in Litmaps starts with building a seed map. This visualization shows the 20 top citations and references to the seeding paper. This list could be enlarged by additional papers. However, as expected, the seed map that was constructed by default already contained articles representing alternative approaches to mindfulness or articles irrelevant to the chosen context. Not to be misguided, we firstly identified 99 sources that cited our seeding paper and manually screened them, keeping only 24 sources that referred to higher education, university context or could be suitable for it judging upon the title, abstract, and keywords. For example, we excluded papers about meditative mindfulness, mindful adaptation of technology, tourism, work environment, medical, or elementary school contexts. We also kept only sources in English, both articles and book chapters.

Figure 2 presents our first Litmap ($k = 25$). It accounted for clusters and years of the selected publications. The size of each circle corresponds to the number of papers that cited the source.

*Step 3: Discover additional articles*. The software allows one to discover additional papers, relying on a prearranged list of articles. We adjusted the search depth: accounted not only for direct citations, but also citations of citations; and did not add more keywords or time limit for publications. The preview enabled us to conduct fast screening of the revealed sources. As a result of this step, we added 34 relevant sources and built Litmap 2 ($k = 59$) (Fig. 3). Litmap 3, apart from our initial sample, contained 23 preselected papers authored by Ellen Langer ($k = 82$) (Fig. 4).

All preselected papers were firstly saved on the platform and then exported in RIS format for Zotero and in CSV format (csv.) for further screening. For this study, the output file contained the following attributes: DOI, title, authors, journal, year, abstract, Litmaps ID, amount of references and cited papers, and PubMed ID. The limitations of these data are the lack of source types and keywords.

Fig. 2. **Litmap 1 (*k* = 25)**

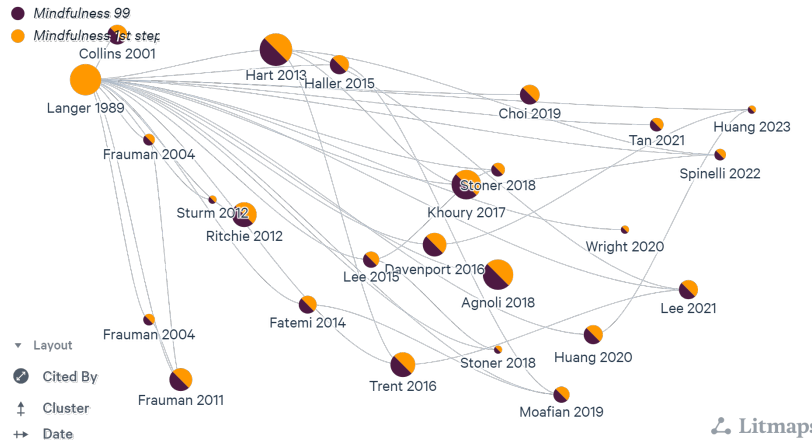



Fig. 3. **litmap 2 (*k* = 59)**

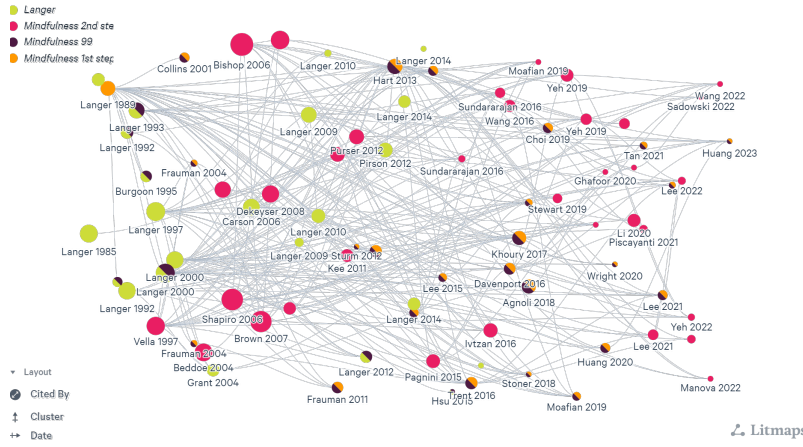
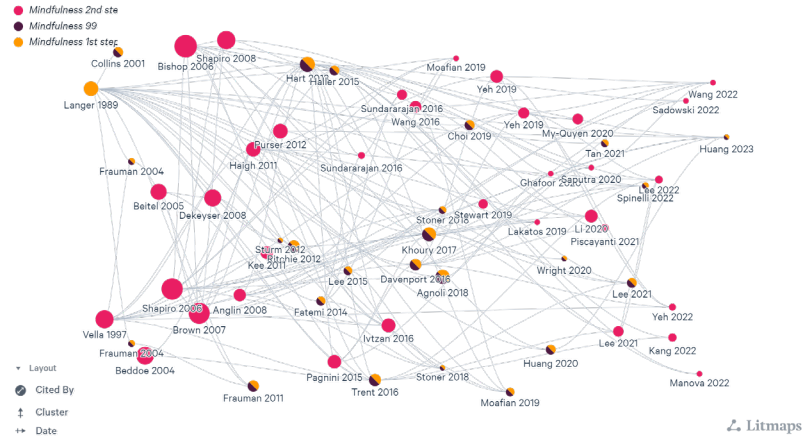


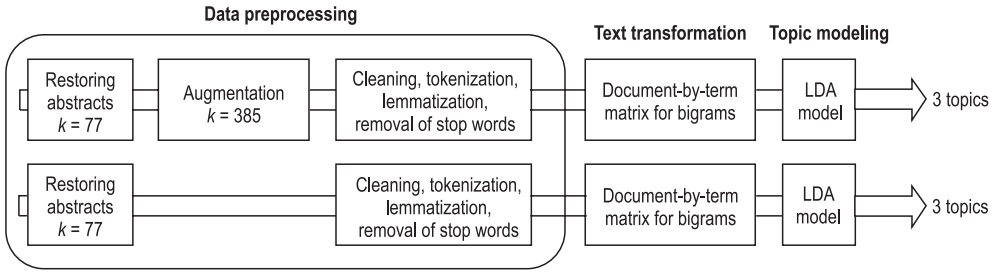

Fig. 4. **Litmap 3 (*k* = 82)**



### 2.2. Data analysis

Data analysis consisted of three stages. We started with a deep reading of the papers to ensure their relevance for the research questions. For a detailed analysis of the obtained results, we proceeded with text mining. At the second stage, we pre-processed the article abstracts and at the third one performed the topic modeling algorithm (Fig. 5).

Fig. 5. **Steps of text mining**




#### *2.2.1. Preprocessing of article abstracts*

*First*, raw textual data was preprocessed as some abstracts were initially fragmented or missing. We restored missing information, where possible, excluding sources which did not contain abstracts at all. The final dataset contained 77 sources. Next, the initial number of abstracts ($k$ = 77) was increased fivefold by using synonym replacement via nlpaug package. Stop words were not included in this operation [Pellicer, Ferreira, Costa, 2023]. The augmented dataset with 385 abstracts was used for further analysis.

*Second*, data were cleaned by removing unnecessary elements (e.g., numbers, punctuations, and special characters), segmenting text into words, deleting stop words, converting all words to lowercase, and word lemmatization [Kobayashi et al., 2018] by using the Natural Language Toolkit (NLTK) in Python. Text segmentation was performed through unigram tokenization since topic modeling prefers the rawest state with the simplest tokenization [Hagen, 2018]. This step also requires lemmatization, which helps to account for different forms of the same word. Next, we automatically filtered the data for stop words, which were commonly spread in English (a, as...), enriching this list with specifics for our dataset aspects (e.g., “present”, “aim”, ‘test’, “hypothesis”, “current”, “analysis”). We also excluded words containing less than three letters and converted all words to lowercase.

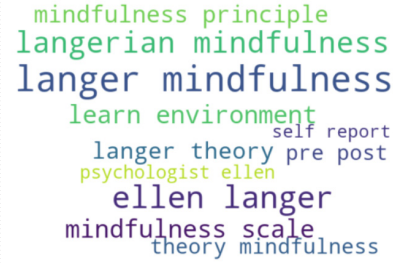
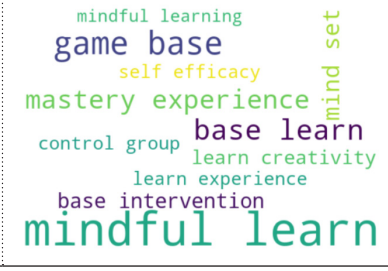
*Third*, preprocessed data were transformed into a matrix structure (also referred to as ‘document-by-term matrix’), where the columns are n-gram, and the rows are article abstracts. In this study, the size range of each n-gram was 2 at the minimum and maximum (word count) to get more insightful outcomes as the key word collocation of ‘mindful learning’ consists of two words [Chauhan, Shah, 2021]. After encoding through CountVectorizer from the Python package scikit-Learn, the number of features which occurred at least 11 times was 82 bigrams.

### 2.2.2. Topic modeling

Qualitative data extracted from abstracts were analyzed through a topic modeling algorithm, which automatically extracts latent semantic topics from a collection of documents. We applied Latent Dirichlet Allocation (LDA) as a generative probabilistic model of a corpus [Blei, Ng, Jordan, 2003] to generate interpretable and consistent topics in scikit-learn from Python. This technique produces threefold output when applied to text data: 1) a set of topics; 2) frequency of words or n-grams in a topic; and 3) proportion of topics in a document [Chauhan, Shah, 2021].

Determining the optimal number of topics is critical for generating the LDA model. The GridSearchCV method in scikit-learn was used to find the ideal combination of values of log-likelihood and perplexity [Tijare, Rani, 2020]. In this study, the optimal number of topics appeared to be three (Log-likelihood –2151.24; Perplexity 41.92 in case of 3 topics versus Log-likelihood –2225.99; Perplexity 41.44 in case of 4 topics) (Table 1).

Table 1. **Frequent bigrams in each topic with topic-word probabilities ($k$ = 385)**

| Bigrams | Word cloud |
|---|---|
| Topic 1:<br>**langer mindfulness** (31.01), ellen langer (25.81), langerian mindfulness (22.69), learn environment (16.25), mindfulness scale (16.12), mindfulness principle (15.24), langer theory (14.58), theory mindfulness (13.78), pre post (13.67), psychologist ellen (11.55), self report (11.0) |  |
| Topic 2:<br>**socio cognitive** (198.97), kabat zinn (115.96), facet mindfulness (111.46), cognitive mindfulness (95.34), achievement emotion (49.36), negative emotion (36.45), mental health (35.06), nursing student (28.12), meditative mindfulness (22.96), positive emotion (22.93), mediate effect (19.19) |  |
| Topic 3:<br>**mindful learn** (144.68), game base (56.27), base learn (44.29), mastery experience (39.15), mind set (30.83), base intervention (24.23), learn creativity (22.0), learn experience (18.97), self-efficacy (18.96), control group (18.44), mindful learning (17.59) |  |

For triangulation, the whole process was repeated without augmentation, and the results reached the same optimal number of topics (Log-likelihood –635.58; Perplexity 68.54 in case for three topics versus Log-likelihood –665.67; Perplexity 63.61 in case for four topics). Appendix 2 contains a list of frequent bigrams in each topic for this approach.

Finally, three authors independently interpreted the results through a deep reading of the articles, grouped by topics, combining the findings in a single interpretation (for an account of topic modeling methodology, see [Blei, 2012]).

## 3. Results and discussion

The results of modeling invoked three topics for further analysis, which we interpreted in the following way: 1) the concept of Langerian mindfulness; 2) the role of Langerian mindfulness in psychological well-being and in soft skills development; 3) principles and tools of mindful learning.

### 3.1. The first topic

The first topic contained bigrams attributed to the founder of the academic research direction related to academic mindfulness: *"Langer(ian) mindfulness", "Ellen Langer", "Langer theory", "theory mindfulness"*, and *"psychologist Ellen".*

As was already mentioned in the introduction, Ellen Langer is a professor of psychology at Harvard University. Her research has spanned a wide range of topics with a particular focus on mindfulness, illusion of control, decision-making, education, and learning. Due to her foundational work in the field of mindfulness, published in the 1970s, the key concept is often entitled as *"Langerian mindfulness".*

*Langerian mindfulness* could be confused with *dispositional and learned or cultivated mindfulness* [Rau, Williams, 2016]. The latter is perceived as a personal trait or cognitive ability, such as attention, as well as the ability to concentrate, which is why researchers refer to these abilities when translating the word 'mindfulness' into Russian, thereby oversimplifying its meaning. A similar bias could be identified in English sources, too. The Langerian approach conceptualizes mindfulness on the level of behavior: e.g., seeking and producing novelty, engagement, and flexibility [Pirson et al., 2012]. This is closer to a cognitive style [Sternberg, 2000], but is more flexible, as it refers to non-algorithmic dimensions of thinking [Langer, Moldoveanu, 2000], being just a process of noticing new things [Langer, 2016b]. This does not consume significant energy, although it is not solely a cognitive process. Ellen Langer calls mindfulness a 'state', or 'mental mode' [Hart, Ivtzan, Hart, 2013], while other researchers refer to Langerian mindfulness as 'a process' of tuning one's own attention to increase the value and awareness of one's experience generated by the sur-

rounding context and reflecting upon it with curiosity and openness [Ritchie, Bryant, 2012].

The bigrams *"mindfulness scale"* and *"self-report"* imply several self-reporting scales, helping to measure Langerian mindfulness: Langer Mindfulness Scale, including LMS [Langer, 2004] and LMS14 [Pirson et al., 2012]; Mindful Creativity Scale — MCS-s [Haller, 2015]; the Mindfulness/Mindlessness Scale — MMS [Bodner, Langer, 2001], including scale crafted for museum visitors [Moscardo, 1992]; Positive State Mindfulness [Ritchie, Bryant, 2012], Collective Mindfulness [Bagrationi, 2017; Hoy, 2003; Weick, Sutcliffe, Obstfeld, 1999]; Mindful Adaptation of Technology — MAT [Matthews, Sun, 2021] and Mindfulness of Technology Adoption — MTA [Sun, Fang, Zou, 2016]. Even though not all of them are relevant in a university context, they mostly stress the importance of creativity, self-efficacy and reflection when gaining individual experiences. These aspects match the current needs of universities related to soft skills. Transferring Langerian mindfulness to the educational environment gave rise to the concept of *mindful learning*. The bigram *"mindfulness principles"* can be related to the seven key principles of mindful learning developed by Ellen Langer. They help to differentiate between Langerian mindfulness in educational settings with controlled processing, effortful thinking, mindless negative evaluations and worries, which are beyond an individuals' control. The first findings, in the 1970s, were perceived as a call for an essentially psychological, ontological, and epistemological shift of the paradigm [Fatemi, 2014]. As Ellen Langer stated, the initial motivation behind her research was to analyze cognitive processes, i. e. how people think, but she realized that quite often, they do not think at all, being mindless [Langer, 2014]. Therefore, she formulated seven groups of beliefs which differentiate mindful learning from the traditional mindless approach to education, which she generalized as the following core principles: 1) openness to novelty; 2) alertness to distinctions; 3) sensitivity to context; 4) mindful self-regulation and emotion management; 5) being open to continuous learning and growth; 6) awareness of multiple perspectives; 7) flexible thinking [Langer, 1997; Sternberg, 2000]. They highlight that knowledge is constructed through actions and interactions [Fatemi, 2014].

### 3.2. The second topic

The bigrams *"socio cognitive", "cognitive mindfulness", "negative/positive emotion"* refer to the alternative title for the Langerian mindfulness — *'socio-cognitive mindfulness'* as Ellen Langer conducted research mainly from the socio-cognitive perspective.

The bigrams *"nursing student"* and *"mental health"* correspond to the context. They highlight high interest towards socio-cognitive mindfulness in the field of medical studies, which was admittedly preceded by the prior interest in meditative mindfulness (the bigram *"me-*

*diative mindfulness"* indicates this shift). Such interest is grounded on the need to develop emotions management, and ability to empathize [Lee, Jang, 2021]. These aspects could also be relevant for students of other fields, as they refer to a student's overall attitude towards the academic process and its outcomes, affecting their motivation to learn, self-management, and well-being [Ibid.]. However, the stream of research related to the meditative approach relies predominantly on the dispositional mindfulness or ability to develop it, while Ellen Langer, on the contrary, applied an evidence-based approach by focusing more on the process of learning and teaching methods: analyzing why and how students act more mindfully in class.

Therefore, the second topic also shows that *Langerian mindful learning* could be confused with *teaching mindfulness* in the *meditative approach,* pioneered by *John Kabat-Zinn* [Kabat-Zinn, 2003]. The first concept implies the use of specific principles and tools for empowering a mindful state in the regular disciplines of the curriculum [Langer, 2000], while teaching mindfulness often assumes additional courses or training, like the 8-week Mindfulness-Based Stress Reduction program [Kabat-Zinn, 2003]. Mindful learning implies that students, during regular classes, can engage, sustain, and mobilize the desired state/process, while a lecturer might supervise favorable conditions for these purposes, through 'brief mindfulness interventions' [Hart, Ivtzan, Hart, 2013] — *mindful teaching*. The Langerian approach to learning entails active processing of information by individuals within the surrounding context, which is possible when their subjective level of control is high, learning is relevant to their interests, and the situation is perceived as novel, interactive, and engaging [Frauman, 2011]. The attitude towards such a learning environment can be measured with the help of a Learning Environment Preference Scale (LEPS) [Frauman, 2004]. Choi et al. [2019] selected three criteria of the appropriate learning environment for mindful learning, which could be arranged through mindful teaching:

1) support of different opinions through a safe and trustful atmosphere;
2) sufficient time for developing and spreading innovative/creative solutions;
3) an opportunity to evaluate one's own progress in developing the required soft skills, with a view to improving perceived self-efficacy. These aspects indicate the following bigrams: "kabat zinn"; "meditative mindfulness").

**3.3. The third topic**

The bigrams "mindful learn(ing)", "game base", "mastery experience", "mind set", "base intervention", "learn creativity", "learn experience", "self-efficacy", and "control group" show different methods of empirical testing of interventions related to mindful learning.

Meditative mindfulness implies certain 'base interventions' for developing particular intentions, such as non-judgmental attitude, or acceptance. It relies on 'self-compassion', 'act awareness', and similar characteristics. The Langerian approach, instead, follows the assumption that novelty seeking and creativity would help to solve students' problems, adjusting their emotional responses to stress [Li et al., 2020]. This state is also achieved through a series of interventions, while the toolbox is different. Ellen Langer started her research with an analysis of the difference in giving instructions — 'conditional instruction'. For example, in a study that explored the link between mindfulness, creativity and problem-solving, the group was divided into two subgroups and asked to suggest new applications for a given list of failed products. The first subgroup was primed for mindlessness as the instruction highlighted the product's intended use and its failure. The second subgroup was primed for mindfulness, and during the instruction, the focus was on the product's properties. The results showed that the latter subgroup generated more creative and innovative ideas for new uses of the product [Langer, 2014].

At a later stage, other brief mindfulness interventions [Hart, Ivtzan, Hart , 2013] were tested, e.g.: 1) employing different methods to capture participants' attention and involvement, such as using questions/prompts or increasing novelty, or adding conflict; 2) facilitating participant control; 3) helping to construct an understanding of the subjective relevance of the program, and having a well-structured orientation plan for the students [Frauman, 2011].

Other researchers either replicate similar interventions or suggest their own ways [Frauman, 2004], which are tuned to the seven Langerian principles of mindful learning. Several prompts were introduced, which might help in defining useful interventions, e.g.: 1) (think), why (at your seminars) at times, individuals struggle to retain and apply information they have received, while at other times, they are successful; 2) why, at times, they may be engaged and mindful, while at other times, they are distracted and indifferent [Frauman, 2011]; 3) what is it that we've missed that we want to bring back into education, like wholeness, well-being before learning?; or, on the contrary, what is it that has been removed that we do not want to return to in the post-pandemic time, such as standardized tests? [Tan, 2021].

Apart from this, there are separate instruments which could be incorporated into lecture design, like mindful goal setting, mindful reading, mindful reflection, as well as teacher role-modeling, mindful engagement, dialogic teaching and appreciative inquiry [Ibid.], etc. The effectiveness of such interventions is usually measured with the following instruments: pre- and post-surveys completed by students, work samples, observation notes made by the lecturer, and reflective journal entries recorded by the researchers [Wang, Liu, 2016]. In summary, Langerian mindfulness also known as socio-cognitive

mindfulness, as opposed to other approaches, is the process of novelty seeking and producing, engagement, and flexibility [Pirson et al., 2012], which should not be confused with dispositional or cultivated mindfulness, as well as with controlled processing or worries. Mindful learning implies that students and lecturers adopt specific tools and principles, in order to foster a mindful state during studies within a regular curriculum, which should not be confused with a meditative approach, also referred to as teaching mindfulness.

A possible future research direction might be analysis of antecedents and conditions for students' mindful state, such as learning methods, particular interventions or learning environment. With the advent of life-long learning, a similar approach can be applied for adult education in universities; however, generational differences should be taken into account. As such, one of the possible directions for future research can be focused on understanding how different generations may perceive mindful learning and what the role of social capital in its promotion is.

## 4. Limitations and further research

The current research intended to establish an agenda for further research of mindful learning in universities. Our findings suggest that future research on mindful learning in universities could focus on the following: 1. Why and how is mindful learning associated with students' socio-cognitive soft skills and mental health? 2. What are possible antecedents and prerequisites for the mindful state of students? 3. What tools would a mindful lecturer use to foster mindful learning? An important topic was left out of the scope of this study — the current perspective of lecturers and students on mindful learning.

The key challenge in conducting the literature review was to differentiate between the various approaches to incorporating mindfulness into a learning setting. This obstacle inspired the second research question and the shift to a scoping review. Most researchers either apply a meditative approach or combine both. However, there are debates regarding the correctness of applying the word 'mindfulness' here. There is even a catchy phrase "McMindfulness" for situations when it is applied to any secular context, decontextualizing it from its original transformative purposes [Anālayo, 2020], when "the 'right' is lost in the practice of 'good'" [Huang, 2020]. It is also important to note that the term 'mindfulness' can be associated with esoteric practices that are inappropriate in the context of secular higher education[3]. This discussion leads to the need for further analyses of 1) attitude towards the Langerian socio-cognitive approach by students, their parents, lecturers, program managers, and academic supervisors; and 2) possible changes in wording, omitting the misleading term "mindfulness".

[3] https://www.forbes.ru/tekhnologii/484739-rost-sprosa-na-ezotericeskie-znania-operedil-drugie-kursy-onlajn-obucenia-v-rossii#bounce

The first goal could be achieved both qualitatively and quantitatively, e.g., with the help of the LEPS scale [Frauman, 2004]. The second goal has also gained some ground as mindfulness has already been translated into Russian in numerous ways, including "conscious presence", "attentiveness", "vigilance", "inclusion", and "awareness". Therefore, the Langerian approach could be perceived through these concepts, which share similar grounds, e.g. through the lens of students' proactiveness [Sorokin, 2022], needed in the current labor market. As prior researchers state, mindful learning is much in line with research on self-directed learning [Tekkol, Demirel, 2018], students' proactiveness, lifelong learning, recurrent education, continuous learning, self-regulated learning, autonomous learning, self-teaching, learner autonomy and agency, proactive learning [Sorokin, 2022], critical literacy [Collins, Insley, Soler, 2001], experiential theory [Yeganeh, Kolb, 2009], experience-based learning [Wright, Wrigley, 2019], socio-emotional learning [Armstrong, 2019], learning related to the 4Cs: creativity, critical thinking, cooperation and communication [Jefferson, Anderson, 2017], the interactionist approach [Moafian et al., 2019], situated learning and authentic learning environments [Stoner, Cennamo, 2018], positive education [Chin Leng, 2013], popular participatory peripatetic performance [Wilson, 2018], and performative e-learning [Sturm, Carter, 2015]. Weick, Sutcliffe, and Obstfeld [1999] expanded the Langerian approach to the concept 'collective mindfulness' by bringing it into organizational and managerial studies. This stream could be of high value for business schools. Hoy [2003] combined Langerian and Weick's studies by focusing on the context of educational organizations. Cooper and Boyd [1996] instrumentalized the Langerian approach by suggesting teaching methods related to learners' engagement in reflection, teachers' ability to play a multifaceted role in promoting mindfulness, including demonstrating interpersonal proficiency, critical thinking, creativity, effective communication, personal well-being, global awareness, and the ability to assess and utilize information.

## 5. Conclusion

Langerian mindful learning is novel for the Russian university environment; nevertheless, it would have considerable potential if implemented into teaching methodology, the principles of universities management, and curriculum. The review highlighted key differences between the Langerian approach and other known alternatives on the level of concepts and operationalization, showing three areas for further research of mindful learning in the university context: 1) its understanding and measurement; 2) its relationship to well-being and soft skills; 3) developing relevant interventions and incorporating them into teaching practices.

Mindful learning for lecturers means expanding students' thinking. It acknowledges students' natural curiosity and capacity for awareness and understanding, involves developing critical thinking skills,

creating meaning, and utilizing knowledge gained through learning [Wang, Liu, 2016]. This is in line with modern FSES HE, requiring more proactiveness, development of soft skills and the maintenance of students' well-being.

The paper contributes to research streams related to the shift towards self-directed learning in higher education and the use of AI tools, as well as machine learning in analyzing article abstracts by referring to web scraping in Litmaps and topic modeling in Python.

As a result of our study, we were able to differentiate what is meant by the Langerian approach in the university context. Russian universities face severe challenges associated with high external instability, which has prompted the shift towards self-directed learning. Therefore, there is a need for methods that could assist lecturers in these changes. The results of our scoping literature review confirmed the potential of mindful learning to provide valuable methodological support. The analyzed socio-cognitive approach was especially helpful in constructing programs for non-conventional settings, such as crafting e-learning [Sturm, Carter, 2015] and outdoor studies [Frauman, 2011]. However, these days, it is more widespread in programs for nurses [Lee, 2022], teaching languages [Moafian et al., 2019], or in secondary schools, with much fewer studies related to other high school programs. Nevertheless, a major share of research is related to the soft skills required for development of educational abilities, such as creativity, critical thinking, and the social skills essential for collaboration. Thus, further research could explore the links between the Langerian approach and the soft skills required by particular programs.

The emphasis on mindfulness in learning makes the skills and knowledge that students acquire more reliable, versatile, and applicable to new contexts, and it also increases students' enjoyment of the learning process [Langer, 1993]. Mindful learning increases sensitivity to diversity, develops an understanding that there are no one-size-fits-all answers, but rather, situationally appropriate solutions. It also reduces the need for overzealousness by increasing the intrinsic interest in the learning process [Langer, 2016a]. It may lead to greater learning outcomes, higher recall, feelings of control, self-esteem, satisfaction, and achievement [Frauman, 2011]. Additionally, nurturing mindfulness among participants may have long-term effects on their environmentally responsible behavior [Ibid.].

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**Appendix 1** Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist

| SECTION | ITEM | PRISMA-ScR CHECKLIST ITEM | REPORTED ON PAGE # |
|---|---|---|---|
| TITLE | | | |
| Title | 1 | Identify the report as a scoping review | 1 |
| ABSTRACT | | | |
| Structured summary | 2 | Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives | 1 |
| INTRODUCTION | | | |
| Rationale | 3 | Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach | 2 |
| Objectives | 4 | Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives | 2–3 |
| METHODS | | | |
| Protocol and registration | 5 | Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number | 3, 5 |
| Eligibility criteria | 6 | Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale | 3–5 |
| Information sources | 7 | Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed | 3 |
| Search | 8 | Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated | 3–5 |
| Selection of sources of evidence | 9 | State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review | 3–5 |
| Data charting process | 10 | Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators | 6–8 |

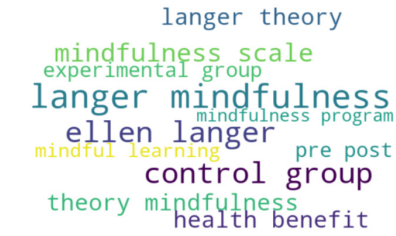
*Table of content*

| SECTION | ITEM | PRISMA-ScR CHECKLIST ITEM | REPORTED ON PAGE # |
|---|---|---|---|
| Data items | 11 | List and define all variables for which data were sought and any assumptions and simplifications made | 5 |
| Critical appraisal of individual sources of evidence | 12 | If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate) | Not applicable |
| Synthesis of results | 13 | Describe the methods of handling and summarizing the data that were charted | 6–8 |
| RESULTS | | | |
| Selection of sources of evidence | 14 | Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram | Illustration 1: steps of data collection and analysis |
| Characteristics of sources of evidence | 15 | For each source of evidence, present characteristics for which data were charted and provide the citations | Illustrations 2–4 |
| Critical appraisal within sources of evidence | 16 | If done, present data on critical appraisal of included sources of evidence (see item 12) | Not applicable |
| Results of individual sources of evidence | 17 | For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives | Illustration 5 |
| Synthesis of results | 18 | Summarize and/or present the charting results as they relate to the review questions and objectives | 8–11 |
| DISCUSSION | | | |
| Summary of evidence | 19 | Summarize the main results (including an overview of concepts, motivation to learning, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups | 11–12 |
| Limitations | 20 | Discuss the limitations of the scoping review process | 11–12 |
| Conclusions | 21 | Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps | 13 |
| FUNDING | | | |
| Funding | 22 | Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review | 1 |

*Source:* [Tricco et al., 2018].

## Appendix 2

The frequent bigrams in each topic with word-topic probabilities ($k = 77$)

| Bigrams | Word cloud |
|---|---|
| Topic 1:<br>**mental health (10.32)**, mind set (7.42), base intervention (7.33), mindfulness principle (6.33), learn environment (6.27), nature mindfulness (5.33), kabat zinn (5.12), positive outcome (4.33), self report (3.41), act awareness (3.36) |  |
| Topic 2:<br>**mindful learn (40.27)**, cognitive mindfulness (27.31), socio cognitive (27.3), game base (16.33), achievement emotion (13.33), base learn (12.33), mastery experience (11.33), negative emotion (11.33), nursing student (9.33), langerian mindfulness (8.23) |  |
| Topic 3:<br>**langer mindfulness (9.39)**, control group (7.38), ellen langer (7.32), mindfulness scale (5.32), langer theory (4.33), theory mindfulness (4.33), health benefit (4.32), experimental group (4.32), pre post (4.31), mindful learning (3.9) |  |

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