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Critical Reflection in Students' Critical Thinking Teaching and Learning Experiences

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Abstract: This manuscript deals with the problematic question of how students' critical reflection is manifested when reflecting on their experiences of learning critical thinking in higher education. Critical reflection is understood as the fusion of personal experience with new knowledge and study content, leading to a new understanding and a new sense of the meaning of oneself, one's learning, studies, and phenomena in the wider environment. A qualitative research method was chosen to reveal the extent of critical reflection. Sixteen students participated in the research: aged 19–49 at the time of the research, from six higher education institutions, representing eight fields of study. A semi-structured interview was chosen for the research and the qualitative content analysis method for the research data analysis, allowing for valid conclusions upon an objective and systematic review of the transcribed interview text. The findings show that in reflections on the critical thinking teaching and learning experiences, students emphasize the process of interaction with others and interaction with themselves, focusing not on the external object but rather on the subject—the thinking person—and their relation to their own thinking. In reflection on teaching and learning, students emphasize applying theoretical knowledge in practice, modelled by the teacher.

Keywords: sustainability; critical thinking; reflection; critical reflection; higher education

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Citation: Indrašienė, V.; Jegelevičienė, V.; Merfeldaitė, O.; Penkauskienė, D.; Pivorienė, J.; Railienė, A.; Sadauskas, J. Critical Reflection in Students' Critical Thinking Teaching and Learning Experiences. *Sustainability* **2023**, *15*, 13500. https://doi.org/10.3390/su151813500

Academic Editors: Grigorios L. Kyriakopoulos, Jordi Colomer Feliu, Dolors Cañabate and Remigijus Bubnys

Received: 24 July 2023
Revised: 4 September 2023
Accepted: 7 September 2023
Published: 8 September 2023

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1. Introduction

Globalisation, economic competition, technological, labour market and demographic changes, exhaustible natural resources, global warming and other similar processes are placing new demands on the usual pattern of social life [1]. A sustainable existence and the survival of our world requires a qualitative change between human needs and economic, social and environmental development. Therefore, sustainability literacy becomes a critical issue in modern society. This concept encompasses the body of knowledge and skills, the uptake of which changes our attitudes and behaviour in everyday life, at work and in the broader social environment. Sustainability literacy is a personal and global pursuit to create well-being for society and appropriately address and manage challenges that may threaten human existence [2]. Sustainability is not merely a sounding political postulate or a trendy socioeconomic slogan. It is one of the components of social responsibility to which we are all committed. To ensure that such vital concepts as 'sustainability', 'social responsibility' and 'sustainability literacy' do not remain plain slogans and/or become tools for manipulation, it is necessary to teach and learn to think critically about both one's attitudes and actions and those of others, as well as about social phenomena and general societal trends. The ability to think critically contributes to developing sustainability skills, which are desirable and seen as a core competency in the same way that reading and writing skills are [3]. Critical thinkers can learn from their practice, rethink it, and continuously improve their performance to achieve personal progress and success, but also the success of others, which

is crucial in organisations operating in today's complex and ever-changing environments. Critical thinking skills allow for managing change and help better understand what is essential in modern society [4].

In this context, the role of higher education is essential, as it aims to prepare individuals to become socially responsible citizens whose mindset and behaviour are guided by ethical standards, personal and shared prosperity, and freedom [5]. The importance of critical thinking in higher education studies is highlighted in both international organizations' [6] and national higher education strategy documents [7], stating that teaching students critical thinking skills is particularly important, as they are a prerequisite for socially responsible behaviour and becoming democratic and civil society actors [8–10]. Critical thinking helps to move beyond traditional views [11]; it is crucial for innovation and R&D activities of universities, where new products and various solutions are generated to address economic, social and environmental issues [12]. However, the process of teaching and learning critical thinking is a tricky business and not just because it is time-consuming [13]. Most importantly, the process of acquiring critical thinking certainly goes beyond the confines of a particular discipline, as it is a complex phenomenon that requires a broader and deeper approach, both for the teacher and the student, as well as for the entire pedagogical community [14].

A student as a learner plays a decisive role in it because learning is more than a process. It is also a state of mind when an individual truly experiences learning, i.e., understanding, thinking, questioning, doubting and seeking. Learning is not about a one-time or finite acquisition of skills, but rather about continuous, life-long effort. To experience learning means to relate to others via dialogue and discover the meaning of learning through this connection [15]. Therefore, a learner must understand what is being learned and why and become aware of the changes the learning brings [16]. E. Smith [17] notes that critical reflection is of value for surfacing the influences on, and effects of, thinking and behaviour. This can only be perceived by thinking, reflecting and rethinking one's learning in a broader context and in relationship with others. *Critical reflection* is essential for reflection not to remain a metacognitive exercise but lead to practical action and real change. It is illustrated by rethinking the assumptions underlying one's mindset and actions, and finding new, meaningful, effective lines of action [18]. Critical reflection inspires us to explore and experiment [19], to evaluate our notions of who we are, what our identity is, what we believe and what we are convinced of [20].

It should be stressed here that the 'critical' in 'critical reflection' can be understood in two ways. First, critical thinking skills and attitudes (e.g., curiosity or reasonable doubt, intellectual stamina or perseverance, etc.) are essential in the reflection process. Second, the emphasis on being critical in the reflection process relates to issues involving the broader social context, relationships between various social groups, and value-based attitudes on fundamental social questions [21]. According to S. Brookfield [22], critical reflection challenges deeply seated assumptions we embrace as being in our best interests when the opposite is true. Critical reflection is a multifaceted and complex phenomenon involving deep knowledge and engagement in reflection processes to deepen self-awareness, better understand interaction with others, and rethink theoretical claims and their practical expression [23].

Teachers play an essential role in fostering critical reflection. They must create a safe space for expressing different views [21]. Moreover, university teachers need to know and understand which study methods are best suited to develop critical thinking skills and, thus, critical reflection in the subject they teach to try them out and replace inappropriate methods with more effective ones. This process, therefore, also requires teachers' ability to reflect.

The article addresses the problematic question of how students' critical reflection is manifested when reflecting on their experiences of learning critical thinking in higher education. The main focus of the research is students' critical reflection manifestation during existing critical thinking learning experiences. Critical reflection is understood here as the fusion of personal experience with new knowledge and study content, leading to

a new understanding and a new sense of the meaning of oneself, one's learning, studies and phenomena in the wider environment. A new understanding is attained from deep thinking, considering the broader context of the content and issues under question, and various approaches and perspectives [24,25].

2. Research Methodology

Type of research. For answering the problematic question, a qualitative research approach was chosen. As Craswel and Craswell [26] say, it is a process of naturalistic inquiry that seeks an in-depth understanding of social phenomena within natural context, helps to explore and understand the phenomenon under study from the perspective of research participants, and gives a depth and richness of understanding as the participants are immersed in studied reality. The use of qualitative research gave a depth and richness of personal experiences of the students in reflecting on their learning experience. The research was conducted in 2019–2020 (before pandemic restrictions).

Sampling. The participants were selected using the non-probability purposive sampling method. It is a sampling technique that allows for recruiting participants who can provide in-depth and detailed information about the phenomenon under investigation, in this case, reflection on learning experience. As Palinkas et al. [27] define, there are several types of purposeful sampling, and one type of such sampling is "the selection of cases with maximum variation for the purpose of documenting unique and diverse variations that have emerged in adapting to different conditions, and to identify important common patterns that cut across variations" [27]. Following this methodological school, these sample criteria for students were set: higher education institution, field of study and study year. Firstly, higher education institutions in the country were identified and approached selecting the students from the fields of studies, which, at the time of the research, were listed in the countries' field of study register. Lastly, the sample was enriched by selecting the students of different study years.

Unlike in probability sampling, non-probability sampling is not supported by recognized mathematical criteria for predicting the minimum sample size that is necessary for valid results. The goal of a qualitative study is to obtain such a sample size as could uncover a variety of opinions [26]. The most important criteria for sample size in qualitative research is data saturation; therefore, the sample size in this research was not predefined before data collection. As Patton [28] states: "The validity, meaningfulness, and insights generated from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytical capacity of the researcher than with sample size".

Research participants. Data saturation was reached after sixteen interviews. Research participants were from six higher education institutions, representing eight fields of study: arts, health sciences, social sciences, humanities, informatics, mathematics, technologies, and physical sciences. In the fields of physical, engineering and social sciences were three participants each; in the fields of health and informatics sciences were two participants each; and in the fields of arts, humanities and mathematics was one participant each. Participants studied at various study levels, and their study year differed too. In terms of the study level, twelve participants were undergraduate students, including three first-year, four second-year, three third-year, and two fourth-year students; three participants were master's degree students, including two first-year students and one second-year student; and one participant was a second-year doctoral candidate.

Research data collection method. Qualitative interviews enable the collection of in-depth, context-specific, open responses from the research participants, expressing their attitudes, opinions, feelings, knowledge and experiences [29]; therefore, a semi-structured interview was chosen for the research, which ensured the directivity of the research, allowed for flexibility in raising key and follow-up questions to the participants and responding to the actual course of the interview, while focusing on the relationship between the research participants and the surveyed phenomenon rather than on the phenomenon itself. The interview consisted of five key questions (Table 1).

Table 1. Interview Questions.

Interview Questions for Students
Introductory question: Developing critical thinking is important in higher education and studies. Critical thinking is also mentioned in the programme/subject you are studying. We would be interested in knowing how you are taught critical thinking. Tell us, what does it look like?
How do you understand that you are being taught to think critically? How do you learn/sense that you have learned/improved your critical thinking skills? What is the most memorable/vivid example of critical thinking learning? Why is critical thinking important to you?

The interviews lasted between 15 and 47 min and were recorded with audio recording devices (including dictating machines on mobile phones) and subsequently transcribed.

Research data analysis method. The qualitative content analysis method was chosen for the research data analysis, allowing for valid conclusions upon an objective and systematic review of the transcribed interview text [30,31]. The research data were analysed using theoretical coding [32]. The qualitative content analysis relies on sequential steps, thus ensuring in-depth data interpretation [33,34]. The content analysis starts with multiple readings of the text, highlighting the key aspects that break the text into separate parts (text reduction), then moving on to marking of text, presenting it in individual statements (theoretical coding), and finally combining the individual statements into sub-categories, and sub-categories into categories.

The data analysis identified four categories: critical thinking learning is reflected through peer interaction, through student-teacher interaction, by applying theoretical knowledge in practice modelled by the teacher, and in relationship with oneself (Figure 1).

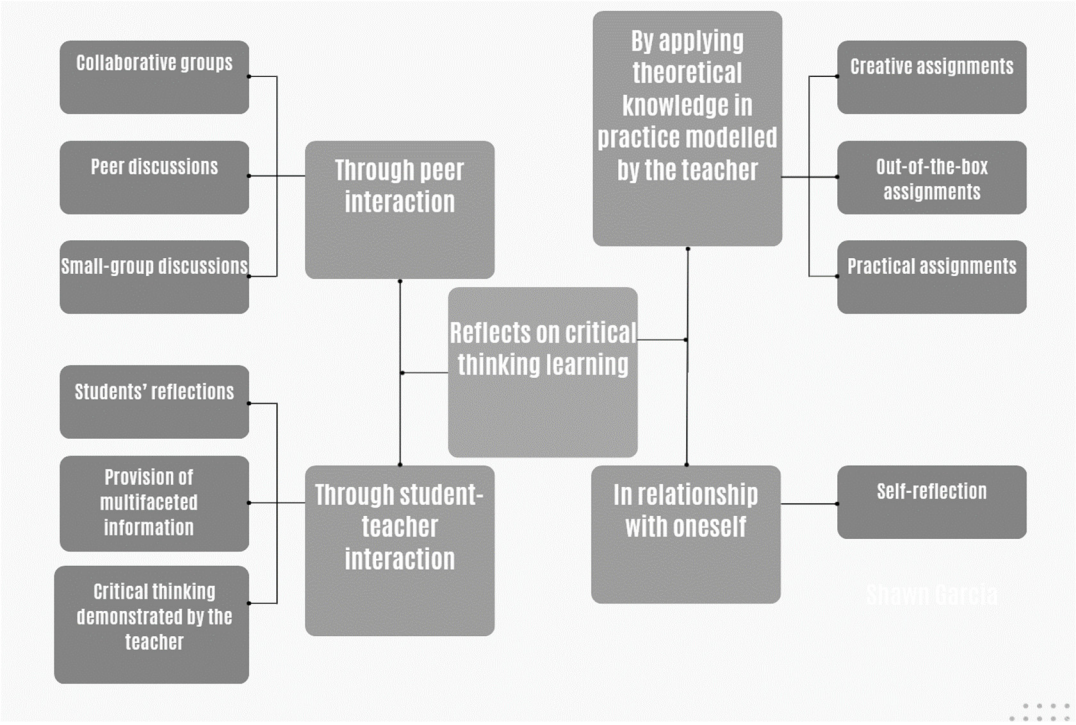


Figure 1. The sub-categories and categories combined through the analysis.

The categories combined through the analysis are interpreted based on references from the scientific literature.

Validity. The research aimed to ensure internal and external validity. The following methods were applied to ensure the internal validity of qualitative content analysis [30]; Ref. [28,35–37]: the relevance of the research outcomes to the actual situation under survey,

where questions were continuously raised during the research of whether an authentic picture of the field of analysis, i.e., critical reflection in the learning process, is depicted, and whether the findings summaries/conclusions are meaningful to the participants, as well as the detailed and comprehensive description and interpretation of data. The external validity of the qualitative data was ensured by researcher triangulation, using the method of independent data analysis by multiple researchers [38,39], where at each stage of the data analysis (reduction, coding, sub-categorisation and categorisation), intermediate insights, planned analytical steps, possible solutions, interpretations, summaries and conclusions were discussed to reach a conceptually sound and valid solution.

Our research, as all qualitative studies, explores subjective meanings of critical thinking experiences. The relationship between subjective meanings and language for conveying meaning is a complex issue. Language is both a reflection of meaning and a tool for constructing meaning [40]. Giving words to subjective experience is not easy because the meaning of experiences is often not fully accessible, neither for subjects of experience nor for researchers of experience, and it is difficult to express it fully in language [41]. In order to ensure the closest possible distance between the lived experience and its linguistic forms, we searched for the best possible expression in English. However, it is likely that not all the nuances of meaning have been conveyed in non-native language.

Another limitation concerns generalization of findings. As qualitative research is designed to uncover people's experiences and understand social phenomena, it is not possible to generalize the findings to the whole student population as it would be done in quantitative research.

Research ethics. A researcher's ethical behaviour is an essential indicator of the research quality [42]; therefore, this research adhered to the basic ethical rules of qualitative research. Participation in the research was voluntary. The research participants were introduced to the research design and objectives, the use of the data collected during the interviews was explained, and confidentiality was guaranteed. They were also informed about the possibility of stopping their participation in the research at any time or the option not to answer any of the questions. Research ethics were also followed in the data processing. Data relating to individual participants are described in detail by anonymising any personal information that could identify them. As recommended in the literature on social research methodology [43,44], consent was obtained to use interview quotes in presenting the research data. The information obtained during the research is stored securely and can only be accessed by the researchers.

3. Main Findings of the Research

The students' reflections revealed that they learned critical thinking in multiple ways, categorised by meaning for the sake of this research. One way of learning is through peer interaction. The students themselves initiate this interaction, as they are eager to find out how to select information and communicate it in a more comprehensible manner. Students thus came together into certain collaborative groups:

> *'But again, it was quite difficult to sort out the information, so we had a joint group discussion where we would all talk and discuss. Critical thinking, I think, was also quite important later when there were students from several fields in the master's studies programme. It was very good to exchange both ideas and knowledge because some were mere theorists, while others were laser specialists or represented a completely different field; therefore, such exchange of knowledge and encouragement of joint communication, I think, contributed significantly to critical thinking, because everybody saw things from a very different perspective. You seem to be presenting one thing, but a person from another field asks questions that relate or are close to them; then you have to think how to communicate in this situation in a way that is understandable and relevant to them.'* D1

Peer discussions involving colleagues with different knowledge of the same phenomena require an effort to communicate the ideas as clearly as possible. Moreover, one must ensure that the communicated ideas are understood and accepted. Therefore, when

reflecting on their experiences of teaching and learning critical thinking, students consider the importance of learning to listen to others:

> *'And the other thing is that I hear the other person's thoughts. Then there are options, and we are able to learn and complement each other.'* D11

Learning in small groups allows students not only to share knowledge but also to gain the other colleagues' experience and achieve the desired outcome:

> *'In our group, we rejected those ideas that were unjustified. A leader in the group was a critical thinker: he could make decisions and explain to others the reasoning behind his ideas, and we developed some truly amazing menthol pills. We were pleased about having invented the technology ourselves; all we had to do was patent and sell it. These pills are mechanically robust and decompose rapidly in the human body.'* D3

In this case, learning with and from others means following the other person's thinking and reasoning and choosing the best solution. Critical thought takes the form of leadership the other person assumes to moderate the discussion and guide others along the decision-making path. At the same time, students learn to evaluate different opinions and alternatives and come up with multiple solutions to a problem through debate:

> *'First, we find various sources, see different options of how things work, and then start debating how things should be. However, these discussions are between us. This is how I understand that we are not learning the only way to solve a problem but looking for even more answers that may turn out completely different. For example, they may confirm the already known opinion'.* D13

The participants' reflections have revealed that sometimes it is not so much about finding one way to solve a problem but about opening up the possibility of different answers, not necessarily looking for what has not yet been discovered but being able to see the answer in previous experiences.

Students' reflections identified another way of learning critical thinking, that is, through student-teacher interaction, when the teacher presents situations or questions that require justification, evidence or explanation:

> *'[...] when your every decision and every achievement is repeatedly questioned: "Why this? Why not this?". Then you are forced to think. You cannot just learn it by heart—you must think about it.'* D1

> *'It was not about what factors you had chosen, but how you justified your choice. There was no single right solution to the problem, but it was crucial that you could explain why you had chosen it.'* D5

In students' reflections, learning critical thinking is understood as a conscious questioning of their opinions, with the teacher encouraging independent and reasoned thinking while facilitating the expression of individual opinions:

> *'[...] but they always ask you to provide reasoning: Why do you think so? What influenced your decision-making? I think, this is one of the aspects of critical thinking. [...] they encouraged us to think a lot, express our opinions, they would never criticise, but instead try to get us to reveal why we thought the way we did or made that specific decision'.* D3

According to the participants, learning critical thinking in interaction with the teacher occurs when the teacher presents multifaceted information and introduces different perspectives on a phenomenon or a problem. This encourages students to reconsider the information presented and make evidence-based decisions:

> *[...] when they try to show us more than one point of view from several angles. The teacher has presented information, studies and data that contradict each other, meaning that this is the case, but there also exists another approach, which may be diametrically opposed, and there is evidence for it too. Thus, immediately a perception appears that there is always more than one side to things in life, and where empirical data can be*

obtained to demonstrate this, it makes you wonder whether what is presented on one side is true. You start to think it could be different, and maybe it is different.' D14

Students' reflections on teaching and learning critical thinking revealed the unique role of the teacher in this process. The critical thinking demonstrated by the teacher encourages students to follow their example in assessing and selecting arguments, looking for alternative solutions, and exploring the context:

'[...] the teacher with a constant "yes-but-no" answer, because even if he does not say it when answering a question, he evades the question so that he does not answer it, but rather adds supplementary information. It is very easy to lose the train of thought in this situation, but on the other hand, his critical thinking is an example for us, a part of his teaching. Even though we are not being taught directly, he shows that he uses it a lot [...] his tasks never have a single answer, he always follows how we are looking for the solution, and then, if our answer does not contradict the logic of the question, it is fine with him. He does not accept us trusting the first method, the first opinion, and take the easy way out.' D13

On the other hand, the teacher encourages students to rely on data, assess other options, or 'demonstrate' how to think, developing students' thinking habits. According to a respondent, *'[...] yes, you get used to assessing... assessing all the facts, the evidence, the probabilities, finding out for which of them the forecast is favourable and for which it is not.'* D10

Students also are taught and learn critical thinking by applying theoretical knowledge in practice, modelled by the teacher. The research data showed that the teacher's creative or out-of-the-box assignments also develop students' critical thinking skills. In dealing with this type of assignment, students analyse, select and interpret information:

'[...] we had to come up with situations or choose an interviewee and argue why we had chosen that particular problem or that interviewee, and then it was important to present the text according to the rules we had been learning. [...] For example, we had an assignment about emigrants, which we needed to present in an interesting, unusual way, so I wrote a story based on the fairy tale "Eglė the Queen of Serpents", where Eglė was prevented by her employee from going home.' D15

Students note that tasks with no single right answer, where their opinions are valued, encourage them to not only select information but also to interpret it:

'[...] when the tasks are not specific, when they are free in content, and you must choose the subject matter yourself. [...] then you must find out on your own what matters the most in that case, you have to choose the things that are important to you, what you want to present and, of course, you have to accomplish those things from the technical point of view.' D1

'Assume there is a film you must understand, and there are no other requirements. Your understanding is enough. There is no wrong way to do it. It is just a discussion; you talk about the specific place in the film you think is more or less significant. There is no final result that you have to achieve, as in solving a mathematics problem. It is just a broad subject with no right answer; each person sees it from their point of view.' D12

Learning critical thinking is perceived in students' reflections as learning to select information in the broad context of the study content or subject, and to present one's own opinion. The absence of strict limitations gives freedom of choice but also presumes responsibility for own choices. This is no easy task, especially when the teacher requires the student to assess the situation in a broader societal and global context:

'[...] practical tasks where you have to apply logical thinking to a particular global situation; then it is more of an issue because there are different assumptions that you have to define or assess, and logic alone is not enough because you must review more things [...] For example, you have to evaluate a pension scheme in a country through a mathematical approach, but you also have to consider people, and the social context, thus

covering more fields. [...] Because you have to consider, think, and assess the situation from your point of view...' D7

Such tasks require logical thinking and common literacy and knowledge in a wide range of fields, not just related to the study subject.

By modelling practical situations and relating them to the context of the practical activity, students learn to assess options, analyse, draw conclusions and make informed decisions:

'[...], we had to software-define the situation and decide which method was better to use to simulate the situation on the computer. [...] The factors that might be important in generating a profit from the grain trade were presented, but we had to decide on our own which factors were important to consider and which could be ignored because there were many of them. It was a matter of finding the correlations between those factors and their effect on the profit: which affect profit, and which do not. Then we had to generate those factors randomly and simulate the development of that company accordingly.' D5

'[...] You have to be very clear about what each machine does, and when there are ten machines, you have to be well aware of what each machine does to understand how to get the result. [...] so that you do not get lost and can see the overall view of what that chain can do without getting lost in the individual devices. [...] without getting lost in the overwhelming amount of information, and to always try to see the final goal.' D9

While thinking about applying knowledge in practical situations, participants reflect on the importance of factual information and their ability to select and assess it in making specific choices to achieve a particular goal.

The students' reflections have revealed that critical thinking is also learned in relationship with oneself. The emergence of this relationship is inspired either externally—by the teacher, in the case of this research, or internally—by the students' internal resources, i.e., their experiences, ideas and attitudes. Teachers inspire a rethinking of one's relationship with oneself by drawing students' attention not only to a particular situation or problem but also to the context surrounding it:

'[...] I remember the teachers' encouragement to be aware of our influence as a subject on how we think about a work of art or a political phenomenon. The acknowledgement and interpretation of a painting depends on my gender, age, race, and the social and historical context in which I live. In other words, through lectures and workshops, I understood the importance of self-reflection. When considering public ideas, I learned to ask questions: Who is speaking? What does the speaker represent? What institutional affiliations bind them? What is the purpose of the opinion expressed?' D16

In this case, the critical look is not focused on the external object but rather on the subject—the thinking person—and their relation to their thinking: What makes it happen? On what does it depend? What defines it?

Thus, over time, students get used to reflecting, rethinking and analysing different situations from their point of view and the perspective of others:

'[...] I no longer accept any situation from just one point of view [...] Maybe there is another way after all? And then, perhaps you need to rewind the tape a bit and see the arguments that have been put forward, or maybe there has been no argument at all, just some conclusion without any justification.' D14

'[...] you somehow make the problem relevant, you look at it from your perspective, from the time's perspective, when we view certain problem from the present moment. It could be a perspective of your opinion, your belief on a problem that has existed for a long time, and you need critical thinking to be able to pull it out of the plane of the history of philosophy and into the current plane, to give it a certain fresh touch.' D4

These examples show that students seek and find internal inspiration. In the students' opinion, different reference points and approaches to the same phenomenon help them better perceive it as a phenomenon of their own time and make it relevant in the present.

Thus, the findings of the research reveal (Figure 1) that in students' reflections, the teaching and learning of critical thinking in higher education institutions are associated with teacher-initiated teaching: by asking questions that stimulate critical thinking, by presenting tasks that do not require a direct answer but rather a reference to a broader problem context, by setting a personal example of critical thinking. Critical thinking learning also occurs through peer interaction—in student-initiated small groups, through student–teacher interaction, and in relationship with oneself. Essential research findings relate to the teacher's role in teaching critical thinking. Reflecting on their teaching and learning experiences, students see the teacher's demonstration of critical thinking as a way to learn critical thinking and point to the conditions necessary to express critical thinking. They find that they are encouraged to think critically by the creative and out-of-the-box assignments provided by the teacher, where they have the freedom to make choices and assume responsibility for them. They emphasise facilitating the expression of opinions, tolerance, and respect for every individual's views. According to the research participants, the constant encouragement by the teacher to analyse, evaluate, argue or use evidence-based data eventually results in students' self-reflection.

4. Discussion

The findings show that in students' reflections on the critical thinking teaching and learning experiences, they emphasise the process of interaction with others. Learning critical thinking occurs through peer interaction—in student-initiated small groups, through student–teacher interaction, and in relationship with oneself. This echoes the findings of other studies that highlight critical reflection and self-reflection as a way of expressing critical thinking in an interactive relationship with others [45] and the interpersonal aspect of critical thinking, which is manifested through teaching and learning critical thinking, mostly in a group of learners. Studies speak of sharing knowledge and skills in a particular discipline, research question or area of interest [46–48]. Group interaction aims to develop critical thinking skills, search for the best solutions to a problem [49–51] and may even improve higher-level thinking skills [52]. The research data show that students who lacked the collaborative component in the critical reflection assignment did not learn reflection as a social process. Researchers point out that critical thinking is not possible without a collaborative model [53,54]. Thus, the interpersonal aspect of critical thinking is extended by the holistic need for a human relationship to emerge and be meaningfully present by sharing thoughts, ideas, doubts, and critical evaluation of self and environment. According to researchers [55–59], collaborative environments have an impact on critical thinking skills, as learners who reflect in collaborative groups also develop their critical thinking skills.

The research revealed the teacher's vital role as a positive role model of critical thinking in shaping students' experiences. This echoes research results that place particular emphasis on the importance of teacher–student interaction in developing critical thinking [50,60,61]. Researchers point out that when it comes to critical reflection, it is up to teachers to create a safe space for different perspectives to emerge and be expressed [21,60]. The teacher, as an authority figure, sets an example of what it means to learn critical thinking and how it can be learned and, at the same time, emphasises the effectiveness of critical thinking [62]. Teachers, too, need to have critical thinking skills [63,64] and be aware of how to develop them [65]: When to provide information? When to hold the learner accountable? When to question and challenge? When to purposefully direct? What teaching and learning methods and strategies to use and when to use them? [66–72]. All of the above have an impact on the effectiveness of teaching [73]. This process also requires teachers' ability to reflect. It is not enough for them to identify what is happening in a process; it is vital to understand the 'why', the 'how', and the 'what if'. This understanding comes through

consistently practising reflection and self-reflection [74] (p. 1). Educators should constantly look for innovative ideas and teaching practices [75] (p. 90), [76].

The research has revealed that in their reflections on critical thinking, teaching and learning, students emphasise applying theoretical knowledge in practice, modelled by the teacher. This reiterates the ideas of other researchers, namely that critical thinking is best learned by solving specific problems in individual subjects [77,78]. Two types of teaching interventions are highlighted in the research as being particularly effective in developing critical thinking: dialogue, usually initiated by the teacher, and learners' exposure to authentic or relevant problems and examples, in particular when problem-solving and role-playing methods are applied [66]. Research [79–81] shows that using unconventional, experimental teaching methods effectively develops critical thinking. It is emphasised that providing students with opportunities to apply theoretical knowledge in practice is essential for developing and improving their critical thinking skills [51], as critical thinking skills are developed more effectively when students are enabled to apply their learning [82]. Students must use their acquired knowledge in novel and ambiguous situations, demonstrating deep thinking and the researcher's competencies. These tasks, in particular, give an idea of whether students can think critically. It is emphasised that such strategies may be effective for encouraging engagement and promoting critical thinking because they can provoke students to confront stark positionalities and even othering in an environment of interaction and negotiation [83–87]. The critical reflection relates to issues involving the broader social context, relationships between various social groups, and value-based attitudes on fundamental social questions [21]. According to S. Brookfield [22], critical reflection challenges deeply seated assumptions we embrace as being in our best interests when the opposite is true.

Our research revealed that students reflect on their critical thinking teaching and learning experiences through interaction with themselves, focusing not on the external object but rather on the subject—the thinking person—and their relation to their own thinking: What makes it happen? On what does it depend? What defines it? Russell [18] points out that critical reflection occurs in rethinking the assumptions underlying one's mindset and actions and finding new, meaningful, effective lines of action. Critical reflection inspires us to explore and experiment [19], to test our notions of who we are, what our identity is, what we believe and what we are convinced of [20]. Critical thinking is also defined as an individual's ability to think deeply and reflectively, see the diversity and complexity of phenomena, and use this on which to base their judgements and decisions [88–90], as well as to strive for the improvement of their thinking [91,92]. Critical reflection is a multifaceted and complex phenomenon involving deep knowledge and engagement in reflection processes to deepen self-awareness, better understand interaction with others, and rethink theoretical claims and their practical expression [23].

The analysis of the research results has revealed that students' critical reflection is most evident in enhancing their personal experience with new knowledge and study-related content. New meanings, realization and understanding of phenomena converge in the learning process. It is important to note that in the students' experiences, there are examples where critical reflection goes beyond the boundaries of a specific study subject and encompasses broader contexts, allowing for a wider view of the phenomenon or problem in question, using a variety of perspectives, thus broadening personal horizons. While these examples are limited, they are significant for understanding what causes a qualitative change in students' mindsets. As mentioned above, this qualitative change occurs while interacting intensively with other learners, the teacher and oneself.

5. Conclusions

The findings show that in reflections on the critical thinking teaching and learning experiences, students emphasize the process of interaction with others and interaction with themselves, focusing not on the external object but rather on the subject—the thinking person—and their relation to their own thinking. However, in the research results, there is

almost no trace of critical reflection, expressed as a deep consideration and evaluation of one's assumptions and circumstances that determine one's thinking. A dedicated study is likely needed to uncover this missing aspect of critical reflection. In the case of this particular research, the aim was not to examine individual aspects of critical reflection but to grasp and reveal critical reflection as such, by exploring the critical thinking learning experience and assessing its extent.

The research results open pathways for further studies that are essential for effective and sustainable critical thinking teaching in higher education. As students' critical reflection was evident in their individual learning experiences, which particularly revealed the practical example of the teacher as a role model of critical thinking, it would be meaningful to further explore the teacher's role and authority by discussing whether and to what extent teachers assume this role and explore their ability and ambition to set higher teaching and learning objectives for themselves and for students. The conclusions underline the importance of critical reflection in the learning process and invite the academic community to discuss the purposeful use of learning strategies and methods that promote critical thought and reflection. It would also be relevant to conduct a quantitative study in order to reveal the differences in students' experiences according to the field of study, level of study and age.

Author Contributions: All authors participated in every stage of the research and equally contributed to the article. The names of the authors are listed in alphabetic order and do not reflect their respective contributions. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board of the Institute of Educational Sciences and Social Work at Mykolas Romeris University, Lithuania. Permission date: 12 December 2019, No ESDI-12/02.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data sharing is not applicable to this article.

Conflicts of Interest: The authors declare that there are no conflict of interest. The funders had no role in developing the study, collecting, analysing, or interpreting the data, writing the manuscript, or deciding to publish the results.

References

1. Stankevičiūtė, Ž. Sustainability Dimension in Organization's Human Resource Management. Ph.D. Thesis, Kauno Technologijos Universitetas, Kaunas, Lithuania, 2015.
2. UNESCO. *UNESCO Science Report: Towards 2030. Second Revised Edition 2016*; UNESCO Publishing: Paris, France, 2015. Available online: https://uis.unesco.org/sites/default/files/documents/unesco-science-report-towards-2030-part1.pdf (accessed on 15 June 2023).
3. Ansari, W.E.; Stibbe, A. Public Health and the Environment: What Skills for Sustainability Literacy–And Why? *Sustainability* **2009**, *1*, 425–440. [CrossRef]
4. Fook, J.; Collington, V.; Ross, F.; Ruch, G.; West, L. (Eds.) *Researching Critical Reflection*; Routledge: Abingdon-on-Thames, UK, 2015. [CrossRef]
5. Franco, A. What Do Ode to Joy, the Nobel Peace Prize, Umbrellas and Cartoons Have in Common? Why Critical Thinking Matters and How Higher Education Moulds. *High. Educ. Future* **2015**, *3*, 108–124. [CrossRef]
6. Bouckaert, M. The Assessment of Students' Creative and Critical Thinking Skills in Higher Education across OECD Countries. *OECD Educ. Work. Pap.* **2023**, *293*. [CrossRef]
7. Mykolas Romeris University. *Mykolas Romeris University Strategic Action Plan 2021–2023*; Mykolas Romeris University: Vilnius, Lithuania, 2020. Available online: https://www.mruni.eu/wp-content/uploads/2021/05/MRU-Strategic-Activity-Plan-2021-2023_Final.pdf (accessed on 23 August 2023).
8. Halpern, D.F. Teaching Critical Thinking for Transfer Across Domains: Disposition, Skills, Structure Training, and Metacognitive Monitoring. *Am. Psychol.* **1998**, *53*, 449–455. [CrossRef] [PubMed]
9. Halpern, D.F. *Thought and Knowledge: An Introduction to Critical Thinking*; Psychology Press: New York, NY, USA, 2014.
10. Barnett, R. A Curriculum for Critical Being. In *The Palgrave Handbook of Critical Thinking in Higher Education*; Davies, M., Barnett, R., Eds.; Palgrave Macmillan: New York, NY, USA, 2015.

11. Fong, C.J.; Kim, Y.; Davis, C.W.; Hoang, T.; Kim, Y.W. A Meta-Analysis on Critical Thinking and Community College Student Achievement. *Think. Ski. Creat.* **2017**, *26*, 71–83. [CrossRef]
12. Council Recommendation on Key Competences for Lifelong Learning. 2018. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018H0604(01) (accessed on 15 June 2023).
13. Bezanilla, M.J.; Fernández-Nogueira, D.; Poblete, M.; Galindo-Domínguez, H. Methodologies for Teaching-Learning Critical Thinking in Higher Education: The Teacher's View. *Think. Ski. Creat.* **2019**, *33*, 100584. [CrossRef]
14. Elen, J.; Jiang, L.; Huyghe, S.; Evers, M.; Verburgh, A.; Dumitru, D.; Bigu, D.; Railienė, A.; Penkauskienė, D.; Ahern, A.; et al. *Promoting Critical Thinking in European Higher Education Institutions: Towards an Educational Protocol*; Dominguez, C., Payan-Carreira, R., Eds.; Universidade de Trás-os-Montes e Alto Douro: Vila Real, Portugal, 2019.
15. Penkauskienė, D. Išprovokuotas Mokymosi Permąstymo Patyrimas Universitetinių Bakalauro Studijų Metu. Ph.D. Thesis, MRU, Miami Springs, FL, USA, 2016.
16. Biesta, G.J.J. *The Beautiful Risk of Education*; Paradigm Publishers: London, UK, 2014.
17. Smith, E. Teaching Critical Reflection. *Teach. High. Educ.* **2011**, *16*, 211–223. [CrossRef]
18. Russell, T. A Teacher Educator's Lessons Learned from Reflective Practice. *Eur. J. Teach. Educ.* **2018**, *41*, 4–14. [CrossRef]
19. Cole, C.C.; Hinchcliff, E.; Carling, R. Reflection as Teachers: Our Critical Developments. *Front. Educ.* **2022**, *7*, 1037280. [CrossRef]
20. Wilson, T.D. *Strangers to Ourselves*; Harvard University Press: Cambridge, MA, USA, 2004.
21. Saric, M.; Steh, B. Critical Reflection in the Professional Development of Teachers: Challenges and Possibilities. *CEPS J.* **2017**, *7*, 67–85. [CrossRef]
22. Brookfield, S. So What Exactly is Critical About Critical Reflection? In *Researching Critical Reflection*; Routledge: Abingdon-on-Thames, UK, 2015; pp. 23–34.
23. Whitaker, L.; Reimer, E. Students' Conceptualisations of Critical Reflection. *Soc. Work Educ.* **2017**, *36*, 946–958. [CrossRef]
24. Dewey, J. The Quest for Certainty. In *John Dewey: The Later Works*; Boydston, J.A., Ed.; Southern Illinois University Press: Carbondale, IL, USA, 1984; pp. 1925–1953.
25. Dewey, J. Democracy and Educational Administration. In *John Dewey: The Later Works*; Boydston, J.A., Ed.; Southern Illinois University Press: Carbondale, IL, USA, 1987; pp. 217–237.
26. Creswell, J.W.; Creswell, J.D. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 5th ed.; SAGE Publications: London, UK, 2018.
27. Palinkas, L.A.; Horwitz, S.M.; Green, C.A.; Wisdom, J.P.; Duan, N.; Hoagwood, K. Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research. *Adm. Policy Ment. Health Ment. Health Serv. Res.* **2015**, *42*, 533–544. [CrossRef] [PubMed]
28. Patton, M.Q. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice*; SAGE Publications, Inc.: London, UK, 2015.
29. Gaižauskaitė, I.; Valavičienė, N. *Socialinių Tyrimų Metodai: Kokybinis Interviu*; Standart Impressa: Vilnius, Lithuania, 2016.
30. Maxwell, J.A. Designing a Qualitative Study. In *The SAGE Handbook of Applied Social Research Methods*, 2nd ed.; SAGE Publications: London, UK, 2008; pp. 214–253.
31. Cohen, L.; Manion, L.; Morrison, K. *Research Methods in Education*; Routledge: Abingdon-on-Thames, UK, 2018.
32. Neuendorf, K.A. *The Content Analysis Guidebook*; SAGE Publications: London, UK, 2017.
33. Silverman, D. *Qualitative Research*; Sage: Los Angeles, CA, USA, 2016.
34. Hennink, M.; Hutter, I.; Bailey, A. *Qualitative Research Methods*; SAGE Publications Limited: London, UK, 2020.
35. Maxwell, J.A. Understanding and Validity in Qualitative Research. *Harv. Educ. Rev.* **1992**, *62*, 279–300. [CrossRef]
36. Miles, M.B.; Huberman, A.M. *Qualitative Data Analysis*; Sage: Thousand Oaks, CA, USA, 1994.
37. Hayashi, P.; Abib, G.; Hoppen, N. Validity in Qualitative Research: A Processual Approach. *Qual. Rep.* **2019**, *24*, 98–112. [CrossRef]
38. Bitinas, B.; Rupšienė, L.; Žydžiūnaitė, V. *Kokybinių Tyrimų Metodologija*; Saulius Jokužys Publishing & Printing House: Klaipėda, Lithuania, 2008.
39. Turner, P.; Turner, S. Triangulation in Practice. *Virtual Real.* **2009**, *13*, 171–181. [CrossRef]
40. van Nes, F.; Abma, T.; Jonsson, H.; Deeg, D. Language Differences in Qualitative Research: Is Meaning Lost in Translation? *Eur. J. Ageing* **2010**, *7*, 313–316. [CrossRef]
41. Manen, V.M. *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing*; Routledge: Abingdon-on-Thames, UK, 2023.
42. Sin, S. Considerations of Quality in Phenomenographic Research. *Int. J. Qual. Methods* **2010**, *9*, 305–319. [CrossRef]
43. Merriam, S.B. *Assessing and Evaluating Qualitative Research in Practice*; Merriam, S.B., Ed.; Jossy-Bass: San Francisco, CA, USA, 2002; pp. 18–33.
44. Karnieli-Miller, O.; Vu, R.T.; Holtman, M.; Clyman, S.; Inui, T.S. Medical Student Narratives and Professionalism: A Window on the 'Hidden Curriculum'. *Acad. Med.* **2010**, *85*, 124–133. [CrossRef]
45. Jones, A. Culture and Context: Critical Thinking and Student Learning in Introductory Macroeconomics. *Stud. High. Educ.* **2005**, *30*, 339–354. [CrossRef]
46. Jones, A. Multiplicities or Manna from Heaven? Critical Thinking and the Disciplinary Context. *Aust. J. Educ.* **2007**, *51*, 84–103. [CrossRef]
47. Ng'ambi, D.; Johnston, K.K. An ICT-mediated Constructivist Approach for Increasing Academic Support and Teaching Critical Thinking Skills. *J. Educ. Technol. Soc.* **2006**, *9*, 244–253.

48. Yang, Y.C. A Catalyst for Teaching Critical Thinking in a Large University Class in Taiwan: Asynchronous Online Discussions with the Facilitation of Teaching Assistants. *Educ. Technol. Res. Dev.* **2008**, *56*, 241–264. [CrossRef]
49. Seker, H.; Komur, S. The Relationship between Critical Thinking Skills and In-Class Questioning Behaviours of English Language Teaching Students. *Eur. J. Teach. Educ.* **2008**, *31*, 389–402. [CrossRef]
50. Cisneros, R.M. Assessment of Critical Thinking in Pharmacy Students. *Am. J. Pharm. Educ.* **2009**, *73*, 1–7. [CrossRef] [PubMed]
51. Wickersham, C.; Westerberg, C.; Jones, K.; Cress, M. Pivot Points: Direct Measures of the Content and Process of Community-Based Learning. *Teach. Sociol.* **2016**, *44*, 17–27. [CrossRef]
52. Trisdiono, H.; Siswandari, S.; Suryani, N.; Joyoatmojo, S. Multidisciplinary Integrated Project-Based Learning to Improve Critical Thinking Skills and Collaboration. *Int. J. Learn. Teach. Educ. Res.* **2019**, *18*, 16–30. [CrossRef]
53. Berghoff, B.; Blackwell, S.; Wisehart, R. Using Critical Reflection to Improve Urban Teacher Preparation: A Collaborative Inquiry of Three Teacher Educators. *Penn GSE Perspect. Urban Educ.* **2011**, *8*, 19–28.
54. Santos-Meneses, L.F.; Pashchenko, T.; Mikhailova, A. Critical thinking in the context of adult learning through PBL and e-learning: A course framework. *Think. Ski. Creat.* **2023**, *49*, 101358. [CrossRef]
55. Colley, B.M.; Bilics, A.R.; Lerch, C.M. Reflection: A Key Component to Thinking Critically. *Can. J. Scholarsh. Teach. Learn.* **2012**, *3*, 1–19. [CrossRef]
56. Guce, I. Investigating College Students' Views on Mathematics Learning through Reflective Journal Writing. *Int. J. Eval. Res. Educ.* **2017**, *6*, 38–44. [CrossRef]
57. Lucena, R.J.; San Jose, A.E. Co-operative Learning in Enhancing the Speaking Skills of Students: A Phenomenological Approach. *Int. J. Adv. Multidiscip. Res.* **2016**, *3*, 67–71.
58. Silva, H.; Lopes, J.; Dominguez, C.; Payan-Carreira, R.; Morais, E.; Nascimento, M.M.; Morais, F. Fostering Critical Thinking through Peer-Review between Cooperative Learning Groups. *Rev. Lusófona Educ.* **2016**, *32*, 31–45.
59. Erdogan, F. Effect of Cooperative Learning Supported by Reflective Thinking Activities on Students' Critical Thinking Skills. *Eurasian J. Educ. Res.* **2019**, *80*, 89–112. [CrossRef]
60. Bulman, C.; Lathleanb, J.; Gobbi, M. The Process of Teaching and Learning about Reflection: Research Insights from Professional Nurse Education. *Stud. High. Educ.* **2014**, *39*, 1219–1236. [CrossRef]
61. Boni-Aristizábal, A.; Calabuig-Tormo, C. Enhancing Pro-Public-Good Professionalism in Technical Studies. *High. Educ. Int. J. High. Educ. Res.* **2016**, *71*, 791–804. [CrossRef]
62. Wass, R.; Harland, T.; Mercer, A. Scaffolding Critical Thinking in the Zone of Proximal Development. *High. Educ. Res. Dev.* **2011**, *30*, 317–328. [CrossRef]
63. Hassan, K.E.; Madhum, G. Validating the Watson Glaser Critical Thinking Appraisal. *High. Educ. Int. J. High. Educ. Educ. Plan.* **2007**, *54*, 361–383. [CrossRef]
64. Genc, S.Z. Critical Thinking Tendencies among Teacher Candidates. *Educ. Sci. Theory Pract.* **2008**, *8*, 107–116.
65. Yeh, Y.-C. Integrating e-learning into the Direct-instruction Model to Enhance the Effectiveness of Critical-thinking Instruction. *Instr. Sci.* **2009**, *37*, 185–203. [CrossRef]
66. Abrami, P.C.; Bernard, R.M.; Borokhovski, E.; Wade, A.; Surkes, M.A.; Tamim, R.; Zhang, D. Instructional Interventions Affecting Critical Thinking Skills and Dispositions: A Stage 1 Meta-Analysis. *Rev. Educ. Res.* **2008**, *78*, 1102–1134. [CrossRef]
67. Lin, S. Science and Non-Science Undergraduate Students' Critical Thinking and Argumentation Performance in Reading a Science News Report. *Int. J. Sci. Math. Educ.* **2014**, *12*, 1023–1046. [CrossRef]
68. Sziarto, K.M.; McCarthy, L.; Padilla, N.L. Teaching Critical Thinking in World Regional Geography through Stakeholder Debate. *J. Geogr. High. Educ.* **2014**, *38*, 557–570. [CrossRef]
69. Bailin, S. Critical Thinking and Science Education. *Sci. Educ.* **2002**, *11*, 361–375. [CrossRef]
70. Tiruneh, D.T.; Weldeslassie, A.; Kassa, A.; Tefera, Z.; Cock, M.; Elen, J. Systematic Design of a Learning Environment for Domain-specific and Domain-general Critical Thinking Skills. *Educ. Technol. Res. Dev.* **2016**, *64*, 481–505. [CrossRef]
71. Bellaera, L.; Weinstein-Jones, Y.; Ilie, S.; Baker, S.T. Critical thinking in practice: The priorities and practices of instructors teaching in higher education. *Think. Ski. Creat.* **2021**, *41*, 100856. [CrossRef]
72. Alsaleh, N.J. Teaching Critical Thinking Skills: Literature Review. *TOJET* **2020**, *19*, 21–39.
73. Maclellan, E.; Soden, R. Psychological Knowledge for Teaching Critical Thinking: The Agency of Epistemic Activity, Metacognitive Regulative Behaviour and (Student-centred) Learning. *Instr. Sci.* **2012**, *40*, 445–460. [CrossRef]
74. McKnight, D. *Field Experience Handbook: A Guide for the Teacher Intern and Mentor Teacher*; University of Maryland: College Park, MD, USA, 2002.
75. Tan, C. Creating Thinking Schools through 'Knowledge and Inquiry': The Curriculum Challenges for Singapore. *Curric. J.* **2006**, *17*, 89–105. [CrossRef]
76. Robichaux, R.R.; Guarino, A. Enhancing Preservice Teachers' Professionalism through Daily Teaching Reflections. *Educ. Res. Int.* **2012**, *2012*, 452687. [CrossRef]
77. Halliday, J. Critical Thinking and the Academic Vocational Divide. *Curric. J.* **2000**, *11*, 159–175. [CrossRef]
78. Smith, G. Are There Domain-Specific Thinking Skills? *J. Philos. Educ.* **2002**, *36*, 207–227. [CrossRef]
79. Byrnes, J.P.; Dunbar, K.N. The Nature and Development of Critical-Analytic Thinking. *Educ. Psychol. Rev.* **2014**, *26*, 477–493. [CrossRef]

80. Schendel, R. Constructing Departmental Culture to Support Student Development: Evidence from a Case Study in Rwanda. *High. Educ. Int. J. High. Educ. Res.* **2016**, *72*, 487–504. [CrossRef]
81. Campo, L.; Galindo-Domínguez, H.; Bezanilla, M.-J.; Fernández-Nogueira, D.; Poblete, M. Methodologies for Fostering Critical Thinking Skills from University Students' Points of View. *Educ. Sci.* **2023**, *13*, 132. [CrossRef]
82. Carey, M.E.; McCardle, M. Can an Observational Field Model Enhance Critical Thinking and Generalist Practice Skills? *J. Soc. Work Educ.* **2011**, *47*, 357–366. [CrossRef]
83. Healey, R.R. The Power of Debate: Reflections on the Potential of Debates for Engaging Students in Critical Thinking about Controversial Geographical Topics. *J. Geogr. High. Educ.* **2012**, *36*, 239–257. [CrossRef]
84. Kim, M.G.; Bednarz, R. Development of Critical Spatial Thinking through GIS Learning. *J. Geogr. High. Educ.* **2013**, *37*, 350–366. [CrossRef]
85. Pedrosa-de-Jesus, H.; Watts, M. Managing Affect in Learners' Questions in Undergraduate Science. *Stud. High. Educ.* **2014**, *39*, 102–116. [CrossRef]
86. McCarthy, L.; Sziarto, K. Zombies in the Classroom: A Horrific Attempt to Engage Students in Critically Thinking about Turkey's Undead Application to Join the European Union. *J. Geogr. High. Educ.* **2015**, *39*, 83–96. [CrossRef]
87. Hager, P.; Sleet, R.; Logan, P.; Hooper, M. Teaching Critical Thinking in Undergraduate Science Courses. *Sci. Educ.* **2003**, *12*, 303–313. [CrossRef]
88. Howard, J.; Zoeller, A. The Role of the Introductory Sociology Course on Students' Perceptions of Achievement of General Education Goals. *Teach. Sociol.* **2007**, *35*, 209–222. [CrossRef]
89. Macpherson, K.K.; Owen, C. Assessment of Critical Thinking Ability in Medical Students. *Assess. Eval. High. Educ.* **2010**, *35*, 41–54. [CrossRef]
90. Huang, G.C.; Lindell, D.; Jaffe, L.E.; Sullivan, A.M. A Multi-Site Study of Strategies to Teach Critical Thinking: 'Why do You Think That? ' *Med. Educ.* **2016**, *50*, 236–249. [CrossRef]
91. Geertsen, H.R. Rethinking Thinking About Higher Level Thinking. *Teach. Sociol.* **2003**, *31*, 1–19. [CrossRef]
92. Phan, H.P. Deep Processing Strategies and Critical Thinking: Developmental Trajectories Using Latent Growth Analyses. *J. Educ. Res.* **2011**, *104*, 283–294. [CrossRef]

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