Enlightenment in the Learning Process? Aha Moments and Threshold Concepts as Effective Practical References in Higher Education Teaching

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This paper examines the role and impact of Aha moments and Threshold Concepts in higher education, focusing on their practical implementation through a case study. Aha moments—sudden insights during learning—are pivotal in grasping complex ideas, fostering deeper understanding and motivation. The integration of real professional experiences into the curriculum is shown to enhance student motivation and improve the application of theoretical knowledge. Positive feedback highlights the effectiveness of this approach, emphasizing the importance of practice-oriented, experiential learning. The paper argues that strategically fostering Aha moments can deepen students' grasp of Threshold Concepts, leading to greater student satisfaction and better preparation for professional challenges, while also contributing to educational quality and employability.

Keywords: Aha moments, Threshold Concepts, higher education, employability, experiential learning

INTRODUCTION

In higher education, the practical relevance of academic programs is regarded by students as a crucial element of their education, as highlighted by Frank Multrus in his earlier study (Multrus, 2009). This emphasizes the importance of practical application within the broader context of the theory-practice relationship (Scheidig, 2018). Recent studies continue to affirm this view, noting that students' perceptions of the relevance of their education to real-world contexts significantly influence their satisfaction and engagement with academic programs (Voss & Gruber, 2020). Consequently, a central focus of a "national skills strategy," as advocated by entities such as the European Commission (European Commission, 2020), is the promotion of employability to ensure that graduates possess the skills and knowledge demanded by the labor market. Falk Scheidig also addresses this complex and challenging demand for practical relevance in higher education in his work "Arranging and Analyzing Practical Relevance" (Scheidig, 2018). This notion is further supported by recent research that emphasizes the alignment of academic curricula with industry needs to enhance graduates' employability (Brown et al., 2021).

In this context, beyond the creation of new knowledge—primarily through applied research—and its dissemination through practice-oriented teaching, particular emphasis is placed on the transfer of knowledge from one realm to another (Dindas, 2021). For the development of competencies, it is therefore crucial how frequently and in what manner transfer-oriented learning and practice processes are designed, as competencies emerge and develop based on experience (Maag Merki, 2009). This is echoed in the work of recent scholars, who underscore that effective competency development is deeply tied to experiential learning, which integrates theory and practice through reflective cycles (Kolb & Kolb, 2017). Learning

processes are rooted in the combination of personal experiences and subsequent reflection (Gotzen et al., 2011). In this regard, universities are often expected to ensure that the outcomes of their research and teaching can be directly utilized to benefit both the economy and society (Dindas, 2021). Recent evidence suggests that the successful transfer of knowledge from academia to practice not only benefits the economy but also enhances societal well-being (Perkmann et al., 2021). Thus, the aim of teaching (and research) is to impart knowledge and competencies to students that are applicable in both academic and non-academic contexts (Knight & Yorke, 2004).

THE CURRENT RELEVANCE AND IMPORTANCE OF TRANSFER TRHOUGH PRATICAL APPLICATION

Although the topic of transfer and the corresponding demand for greater practical relevance in education is not new, it remains highly pertinent and significant, as Gabi Reinmann points out in a blog post (Reinmann, 2014). She emphasizes the ongoing relevance of this issue, noting that students across nearly all fields of study seem dissatisfied with the practical aspects of their education, which aligns with the findings previously discussed by Multrus (Multrus, 2009). Practical components and specific courses that offer hands-on experiences are particularly important to students. Multrus observes that universities of applied sciences (Fachhochschulen) perform better in this regard compared to traditional universities, leading to a significant gap between student expectations and the actual situation at universities. This gap is particularly evident in the application of learned knowledge, where deficits are apparent (Multrus, 2009). Multrus's comprehensive comparison between different types of higher education institutions reveals that the quality and frequency of practical relevance in academic programs can vary significantly. He notes that even at universities of applied sciences, which are renowned for their practical orientation, his data reveal certain shortcomings (Multrus, 2009). Two findings from his study are particularly insightful: first, nearly all students consider practical relevance important, viewing it as an advantage for entering the workforce (Multrus, 2009). Second, the majority of students, both at universities (65%) and universities of applied sciences (73%), support the inclusion of mandatory curricular components (e.g., internships) as a crucial step in advancing higher education (Multrus, 2009). Multrus concludes that students desire and demand more practical relevance and career-oriented content in their studies. In this context, Gabi Reinmann underscores that perceptions of practice and practical relevance can vary widely among both students and instructors, highlighting that practice and practical relevance are complex, multidimensional concepts (Reinmann, 2014).

In the years following Multrus's seminal 2009 study, subsequent research has continued to support and expand upon his findings, emphasizing the critical role of practical relevance in higher education. Multrus himself revisited the topic in a more recent publication, where he further elaborated on the ongoing need for integrating practical experiences into academic programs. In his 2016 study, Multrus highlighted that despite some progress, the disparity between student expectations and the practical elements of their education persists, particularly in traditional university settings (Multrus, 2016).

Additionally, newer studies have echoed Multrus's concerns, showing that students continue to value practical relevance as a decisive factor for their future career success. For instance, research by Gerstung and Deuer (2020) demonstrated that students are increasingly demanding curricula that are directly aligned with professional skills and competencies needed in the workforce (Gerstung & Deuer, 2020). Furthermore, a recent survey by the German Council of Science and Humanities (Wissenschaftsrat, 2022) reinforced Multrus's earlier observations by finding that a majority of students still perceive a significant gap between academic theory and practical application, underscoring the necessity for educational reform to address this persistent issue (Wissenschaftsrat, 2022).

These more recent publications not only validate Multrus's initial insights but also highlight the enduring relevance of his work in contemporary debates about educational reform. As higher education continues to evolve, Multrus's findings serve as a critical reference point for ongoing discussions about how best to bridge the gap between theory and practice to meet the needs of modern students and the labor market.

In the German higher education landscape, there are diverse efforts aimed at enhancing this complex, multidimensional concept and thereby increasing student satisfaction across various levels. These efforts often manifest in an unstructured manner through "lighthouse projects" (Hoffmeister & Kümmel-Schnur, 2019), but encouragingly, they also take more structured forms, such as initiatives like the implementation of practical semesters (Kleinespel, 2014) and, on the procedural level, through the development and evaluation of concepts aimed at fostering a closer integration of academic teaching and practical application (Arnold et al., 2014). In this context, the importance of "quality initiatives to promote transfer" is emphasized as a means of enhancing the quality of teaching (Bernholt et al., 2018, p. 46). Specifically, this can involve promoting the curricular integration of transfer formats within subject-specific teaching, as "those who seek transfer should not view it as an additional nice-to-have, but must embed it within the curriculum to ensure appropriate credit for student effort" (Hoffmeister & Kümmel-Schnur, 2019).

To support this demand and the previously outlined objectives, the use of "Aha moments" (Kounios & Beeman, 2015) as a teaching strategy could serve to strengthen the practical relevance of instruction. By deliberately incorporating practice-relevant content and creating moments of insight, students can better connect what they have learned with real-world application scenarios (Effertz, 2022). This enables students to recognize and utilize the relevance of their acquired knowledge in both academic and practical contexts (Schulte, 2015). Consequently, the integration of Aha moments can serve as a means to reinforce practical relevance, as intentionally incorporating practice-oriented tasks and problems into instruction can consciously stimulate these moments. These not only promote a deeper understanding of theoretical content but also potentially facilitate its practical application in professional contexts, aligning with the dialogical principle articulated by Martin Buber: "I have no doctrine. I merely show something. I show reality, I show something in reality that has not been seen or has been seen too little. I take the one who listens to me by the hand and lead him to the window. I push the window open and point outside. I have no doctrine, but I conduct a conversation." (Buber, 1962, p. 1114)

This paper aims to explore such a "showing out of the window" and, in doing so, examine the significance of Aha moments, discussing how they can be systematically integrated and thereby fostered within a teaching and learning context. The focus of this paper is on the phenomenon of Aha moments, as they can be understood in pedagogical practice as pivotal moments that can transform and enrich the learning process (Bowden & Beeman, 2003).

This paper discusses the practical application of Aha moments in the context of teaching. It explores the role they can (potentially) play in the learning process and how they can be intentionally promoted within teaching, particularly in the context of assessments. Consequently, this paper presents a practical application of theoretical insights: the integration of Aha moments as a non-graded component of assessment in (one's own) higher education teaching. This approach aims not only to impart knowledge to students but also to encourage them to reflect on and apply this knowledge in (their own professional) practical contexts. Through this method, the paper highlights the importance of Aha moments in the educational process and demonstrates their potential to promote deeper, experience-oriented learning, thereby facilitating the transfer discussed earlier.

The structure of the paper begins with a brief theoretical background on Aha moments, considering both psychological and pedagogical perspectives. Following this, a concrete example is presented on how these moments can be initiated and supported within the framework of an assessment in teaching. The relevance of this paper lies in its contribution to the (potential) improvement of teaching practice. By gaining a better understanding of the mechanisms that trigger Aha moments, educators can develop more effective strategies to inspire learners, expand their problem-solving skills (in a self-directed manner), and ultimately better achieve their learning objectives. This not only fosters the individual development of learners but also contributes to enhancing the overall quality of education in alignment with the required practical relevance (Multrus, 2009).

HISTORICAL SIGNIFICANCE AND DEVELOPMENT OF AHA MOMENTS IN THE FOCUS OF THRESHOLD CONCEPTS

The historical development and significance of Aha moments are closely linked to the research of the psychologist and linguistic theorist Karl Bühler, whose work in semiotics made substantial contributions to the understanding of these phenomena (Dindas, 2017). Bühler, who was active in the early 20th century, shaped the concept of Aha moments through his investigations into human cognition and communication. His theories emphasized the role of insight and sudden understanding in the learning process. Bühler recognized that Aha moments are not merely snapshots of realization, but rather critical turning points in cognitive development that lead to a deeper understanding and a restructuring of knowledge (Hoskovec, 2018). These moments are characterized by the sudden integration of various fragments of knowledge into a coherent whole, often resulting in a surprising solution or insight. Bühler's research was instrumental in highlighting the importance of these intuitive leaps in knowledge processing and establishing them as central elements in the study of learning and thinking processes (Dindas, 2017).

Bühler's work thus laid the foundation for the modern understanding of Aha moments as key moments of insight and creativity. Karl Bühler and the Würzburg School of Thought Psychology (Dindas, 2015) coined the term Aha moments to describe a deep understanding that suddenly and unexpectedly emerges at the conclusion of a thought process. This insight led to the conclusion that the conscious act follows the thinking process and ultimately cannot be equated with thinking itself. Karl Bühler's approach in his scientific work is particularly distinguished by his congenial reading, which significantly shaped his methodology and perspectives. This approach is a prime example of multidisciplinarity, as Bühler transcended the boundaries of individual disciplines, incorporating insights from various fields of knowledge into his considerations (Dindas, 2017). His distinctive approach reflects the ability to synthesize diverse ideas and concepts, generating new, innovative insights that can be applied in both theory and practice.

Building upon Bühler's foundational ideas, the concept of Threshold Concepts has emerged in contemporary educational theory, offering a complementary perspective on moments of insight. Threshold Concepts, as introduced by Meyer and Land (2003), represent critical points within a discipline that, once understood, transform the learner's perspective and lead to a deeper comprehension of the subject matter. These concepts act as "portals" that open up new ways of thinking about a subject, often resulting in what could be considered an Aha moment, albeit in a more structured educational context.

The connection between Bühler's Aha moments and Threshold Concepts lies in their shared emphasis on the transformative power of understanding. While Bühler's Aha moments occur suddenly and often unpredictably, the Threshold Concepts framework suggests that these moments can be deliberately cultivated through educational design. Understanding a Threshold Concept often involves grappling with troublesome knowledge—knowledge that is conceptually challenging and may initially seem counterintuitive (Land, et al., 2005). Once a learner passes through this conceptual threshold, their understanding is irreversibly transformed, similar to the profound insights described by Bühler.

Furthermore, both Bühler's and Meyer and Land's concepts underscore the importance of synthesizing ideas across disciplines to achieve deep understanding. This multidisciplinary approach not only enriches the learning experience but also fosters the development of innovative thinking, as learners are encouraged to connect and apply concepts in novel ways (Cousin, 2006). Thus, integrating the Threshold Concepts framework with Bühler's idea of Aha moments offer a robust model for understanding how critical insights occur and how they can be facilitated within educational settings.

Recent research approaches in the field of knowledge transfer to practice (e.g., Christ et al., 2019, commissioned by the Federal Institute for Vocational Education and Training) are also characterized by their multidisciplinary nature. Studies from a wide range of research fields approach the topic of knowledge transfer in various ways, employing diverse perspectives and methodologies for operationalization (Schubarth et al., 2012). A common goal of all these approaches is to ensure that higher education imparts both scientifically grounded and professionally relevant knowledge, thereby qualifying students for entry into their respective careers. This requires, among other things, that academic programs include suitable

practice-oriented elements (Multrus, 2009). These practice-oriented elements are integral to the quality of teaching and learning, understood as a multidimensional concept in which individual components interact at different levels. In this context, there is a wealth of conceptual and empirical work on this subject, leading to varying results concerning the number and designation of the critical dimensions (e.g., Heublein et al., 2017; Seidel, 2015). However, a detailed analysis of all these dimensions would exceed the scope of this paper and would not fully do justice to the comprehensive nature of the topic. Therefore, this paper will focus on the specific aspect of practical relevance as an important component of the multidimensional nature of teaching and learning quality, providing an exemplary examination and presentation. Given the complexity of this topic, the content presented here cannot be exhaustive or definitive but is intended to offer initial points of orientation. This also implies that knowledge transfer cannot be adequately represented by a single practical element alone.

Nonetheless, the insights outlined above provide a starting point for understanding the application and significance of Aha moments in the teaching context. Karl Bühler's emphasis on the intuitive integration of knowledge elements and the resulting insights offers perspectives on how such moments can be consciously fostered in academic teaching. Consequently, this concept can be utilized in teaching to develop methods and strategies aimed at deliberately stimulating these profound moments of insight. These approaches take into account how students process and comprehend information and aim to create learning environments that facilitate Aha moments. The goal is not only to impart knowledge but also to promote critical thinking, problem-solving skills, and creative ideation (Dindas, 2024). Thus, the translation of Bühler's theories into the practice of higher education teaching demonstrates how theoretical concepts can contribute to improving the quality and effectiveness of teaching and learning in universities, preparing students for complex, real-world challenges, in line with the previously outlined demand by Hoffmeister and Kümmel-Schnur.

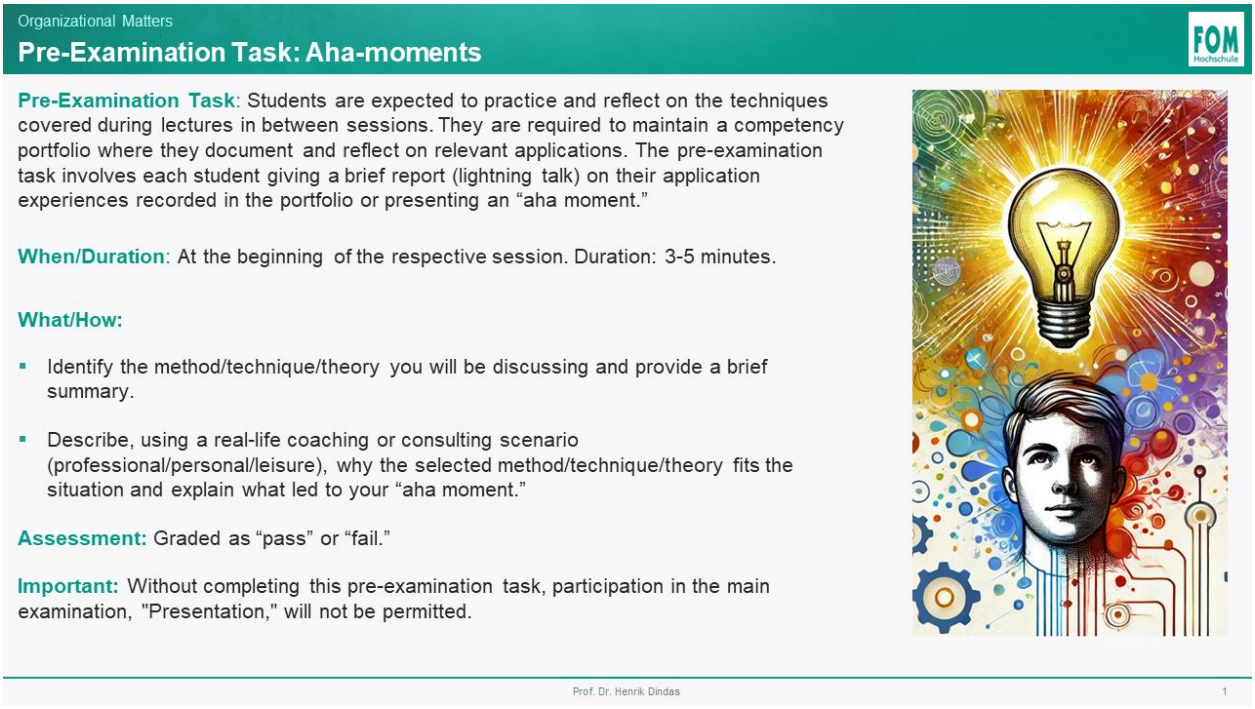
APPLICATION IN (MY OWN) TEACHING CONTEXT

The application of the previously outlined insights to the specific teaching context led to the development of a new pre-assessment task designed to actively promote concrete Aha moments. A key characteristic of teaching at FOM University, and consequently a requirement for the design of this pre-assessment, is that the students are already employed. Founded in 1991 by business associations in the Ruhr region, FOM University of Applied Sciences for Economics & Management is a non-profit, foundation-supported private university. With 34 locations, a dedicated digital teaching complex, and approximately 50,000 students, it offers on-campus degree programs. These programs are specifically designed to accommodate the professional commitments of the students and to foster a close connection between professional practice and academic learning, both in the structure of the programs and in the didactic approach. This enables students to directly draw upon real-world examples from their workplace environments, or the "application context" (Schulte, 2015, p. 22), thereby ensuring the effective transfer of theory into practice.

During the Winter semester of 2023/24, a new concept for a non-graded pre-assessment was implemented as part of the "Psychological Communication Skills" module in the Bachelor's program in Business Psychology (B.Sc.). This "new" assessment format aimed to encourage students to apply the concepts and theories acquired in the course to real (professional) contexts, consciously identify moments of Aha experiences—instances of sudden insight and knowledge integration—and reflect on these in the classroom through a Lightning Talk: "Lightning talks are short, highly focused, and effective presentations. When done well, they are an excellent way to convey your message within a limited time frame. The time constraint compels speakers to refine their message, leaving only the most critically important elements. They have been widely used by scientists and tech groups to shift the emphasis from 'look at everything I know' to 'what is the most important thing for you to know right now?" (Batt, 2021). A central component of this approach was that students were required to identify their personal Aha moments, those insights and realizations they experienced while applying the module content in their professional activities, then reflect on these moments, and finally present them to their peers in a brief, slide-free talk.

These presentations served not only as a means of reflection and experience-sharing but also as an opportunity for students to share their practical applications of theory and the insights they gained with their peers. The Lightning Talks were not graded (students could only receive a "pass" or "fail"), as the focus was on the actual performance and learning process rather than on evaluation. This approach aimed to foster a deeper connection between theory and practice and to motivate students to actively apply and critically reflect on what they have learned in their professional lives, both now and in the future. This created a dynamic and interactive learning environment that emphasized the practical relevance of the module content while also promoting the development of key competencies and future skills (Stifterverband & McKinsey, 2021). Specifically, students were provided with the following requirements during the lecture, as illustrated in Figure 1.

FIGURE 1
DETAILED INSTRUCTIONS FOR THE PRE-ASSESSMENT "AHA MOMENT"



By encouraging students to identify and present their personal Aha moments in the course, they were not only trained in their ability to critically reflect and self-assess but also motivated to actively and practically apply theoretical knowledge. This type of assessment can thus promote a deeper understanding and more intensive engagement with the learning material, helping students to recognize the relevance of the content for their personal and professional development. Through this approach, the concept of Aha moments are directly integrated into teaching practice, contributing to making the learning process more tangible and perhaps even more meaningful for students.

EVALUATION & REFLECTION

The outcomes of the Aha moments presented in the module were highly positive and enriching, with students experiencing a wide range of individual insights in both their professional and personal lives. During the course, students evaluated this assessment very positively, particularly highlighting that the requirement for reflection encouraged them to think more deeply about the course content and to accomplish the transfer of theory into practice. They also emphasized how valuable it was to apply

theoretical knowledge in their professional practice and to share the resulting insights within the course, fostering learning from one another, much in line with the concept of a Community of Practice (Heiss, 2009). Many students noted that the opportunity to experience and collectively reflect on Aha moments not only enhanced their motivation to learn but also significantly improved their skills in psychological communication. The students particularly appreciated the practice-oriented focus and the associated opportunity to test and develop their competencies in real-world situations.

At the end of each semester, FOM offers its students the opportunity to participate in an evaluation. In this survey, students share their opinions and experiences regarding the courses they attended, as well as the organization, advising, and general study conditions. Although this specific assessment task has not yet undergone an independent evaluation, the student feedback was overwhelmingly positive. This was especially evident in the results of the general semester evaluation, where students explicitly praised this form of assessment in the free-text comments, despite it not being directly solicited. A specific part of the semester evaluation is dedicated to assessing the practical relevance of the courses. For this purpose, students are asked a specific question: "How do you evaluate the practical relevance of this course?" The evaluation scale ranges from -2 (significantly too little practical relevance) to +2 (excessively high practical relevance), with 0 representing "just right," -1 indicating too little, and +1 indicating too much or too extensive. Interestingly, the evaluation results for the module discussed in this paper show that students overall rated the practical relevance as "just right," with an average score of 0.0 (n=23). Additionally, in the free-text comments (item: "What did you particularly like about this module in the past semester?"), 6 out of 23 students specifically highlighted the inclusion of transfer and practical experiences, examples, and relevance. The comments provided have been translated from German into English, which may have affected the phrasing of some statements. However, the core meaning and intent of the feedback have been preserved, ensuring that the overall message remains clear and comprehensible.

- One of the best modules of the entire program, due in part to the instructor's motivation and also to the content delivered and the Aha moments. Everything can be applied in practice, both professionally and personally. The structure of the module was just right, making me feel well-supported, and the exercises and examples were very helpful. Additionally, the instructor's communicative style was very engaging, so much so that I even looked forward to the lectures. Consequently, there is nothing to improve. The only thing that would be nice is if more time could be dedicated to this subject, so its importance in the curriculum could be greater, as I consider this module to be very important, especially for those aspiring to leadership positions.
- Humorous, professional, and interesting atmosphere. The lecture was entertainingly designed with good practical transfer and extensive learning value.
- You bring a lot of prior knowledge and commitment! The lively lectures sparked my interest in coaching! It's clear that you enjoy teaching, and I think you gave each of us a good feeling and prepared us well. Thanks also for the Aha moments!
- The instructor significantly strengthened my interest in the subject through his demeanor, motivation, and enthusiasm for the topic. I was eager to participate in the course and was compelled to engage through the Aha moments. There was room for questions and exercises, allowing us to experience coaching methods firsthand. He also visualized a lot, showed examples, and brought materials. Overall, it was a lot of fun—even the exam. I was also able to take away many insights, not only for my professional life but also for my personal life.
- An all-around successful module with a strong theory-practice connection. The first module that has provided me with a lot of useful insights for my professional life. The instructor is extremely student-friendly.
- The theory-practice transfer was very well executed. My prior knowledge was effectively refreshed, and my enthusiasm for the topic was reignited. Mr. Dindas succeeds in involving all students and generating enthusiasm for the subject. The atmosphere in the seminar was truly positive; you could feel the joy of learning among everyone.

This feedback highlights that students not only accepted the assessment task but also perceived it as an essential and positive part of their learning experience. The positive response confirms the success of the concept and its contribution to enhancing the teaching quality within the module. While the very positive evaluation of the module provides valuable insights, it is important to reflect that these results cannot be attributed solely to the implementation of Aha moments as an assessment task. It must be noted that the evaluation encompassed the entire module, and therefore, the specific impact of the Aha moments within this framework was not isolated. The overall positive feedback may thus have been influenced by other aspects of the module. With this in mind, a specific evaluation is planned for the future, focusing exclusively on the Aha moments as an assessment task. This targeted evaluation aims to provide a clearer understanding of how this particular component of the course contributes to students' overall perceptions and learning outcomes. This approach will help minimize potential biases arising from the evaluation of the entire module and allow for a more detailed understanding of the effectiveness of the Aha moments.

CONCLUSION

This paper has highlighted the significance and impact of Aha moments in teaching, with a particular focus on their practical implementation and promotion through a case study from my own teaching experience. The aim was to demonstrate how integrating real professional experiences into the academic curriculum can enhance learning motivation and improve the practical application of theoretical knowledge. The positive feedback from students confirms the effectiveness of this approach and underscores the relevance of practice-oriented and experiential teaching and assessment. In line with Holtz's findings, the theory-practice connection appears to be a potential influencing factor for student satisfaction (Holtz, 2014). Thus, an innovative teaching strategy that can strengthen the required practical relevance is the deliberate use of Aha moments. By incorporating practice-oriented challenges and problem-solving into the curriculum, Aha moments can be generated that not only deepen theoretical understanding but also facilitate the practical application of learned concepts. This method can foster the connection between theory and practice, thereby positively influencing student satisfaction.

The feedback presented in this paper suggests that future research should focus more intensively on the effective integration of theoretical content and practical experiences to create deeper and more sustainable learning experiences. It would be particularly interesting to explore the adaptation and optimization of such approaches across different disciplines and fields of study. Additionally, it would be important to investigate the long-term effects of these teaching methods on the professional development of students. These insights could significantly contribute to making higher education more future-oriented and practice-relevant, better preparing students for the challenges and opportunities in an ever-changing workforce.

Moreover, the integration of Threshold Concepts into the teaching strategy amplifies the significance of Aha moments within the learning process. Threshold Concepts, as critical points of transformative understanding within a discipline, serve as catalysts for these moments of insight. By intentionally designing curriculum components that challenge students to engage with and overcome these conceptual thresholds, educators can foster deeper comprehension and ensure that the knowledge gained is both profound and enduring. This approach not only aligns with the goals of practice-oriented education but also enhances the students' ability to apply theoretical knowledge in practical contexts. The Threshold Concepts framework, therefore, provides a robust pedagogical tool that complements the use of Aha moments, ensuring that students not only experience these moments of insight but also retain and apply their newfound understanding in diverse, real-world situations. Emphasizing the importance of such transformative learning experiences, future research should explore how Threshold Concepts can be systematically incorporated into curricula across various disciplines to maximize the educational impact and better equip students for their professional journeys.

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