

Article

A Qualitative Study Conceptualizing Quality Education in Relation to Sustainability: A Focus on Teacher Education

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ABSTRACT

Background: Quality education in the context of sustainability is emphasized in the 2030 Agenda and articulated in Sustainable Development Goal 4 (SDG 4). This study aims to clarify how quality education is conceptualized in relation to sustainability within teacher education, which is essential for promoting sustainability in educational settings.

Methods: Using an interpretative qualitative approach, data was collected from 17 webinar focus groups over 16 months, involving 216 participants, including researchers, policymakers, teachers and students from various continents. Data was analyzed utilizing Kuckartz's steps of categorization.

Results: Key themes include (1) the pivotal role of teachers and teacher educators in facilitating quality education, (2) social and educational justice in conceptions of quality education, (3) coherence in policy implementation gaps, and (4) contextual awareness in conceptions of quality education.

Conclusions: The findings offer insight into how sustainability could be promoted by focusing on aspects such as the pivotal role of teachers, social and educational justice, coherence in policy implementation, and contextual awareness within educational settings.

KEYWORDS: quality education; sustainability; SDG; teachers; teacher education; SDG 4; sustainability

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ABBREVIATIONS

MDG—Millennium Development Goals; SDG—Sustainable Development Goal; SDG 4—Sustainable Development Goal 4; UN—United Nations; UNESCO—United Nations Educational, Scientific and Cultural Organization; UNICEF—International Children’s Emergency Fund

INTRODUCTION

The United Nations (UN) called for action in 2015 by developing the 17 Sustainable Development Goals (SDGs) as a new vision, articulated as the 2030 Agenda [1], from the preceding Millennium Development Goals (MDGs). The main objective of this transformative global framework is to achieve a world free of poverty, effective employment strategies, access to quality education, and equality [2]. Therefore, the Teach4Reach 1.0 project was developed to support awareness raising and collaboration regarding SDGs 3, 4, 5, and 10 in teacher education by focusing on the perspectives of researchers, policymakers, teachers, teacher educators, and students. This paper discusses the conceptualization of quality education based on Sustainable Development Goal 4 (SDG 4) in an empirical study executed as part of the project.

‘Quality education’ is encapsulated within this agenda as SDG 4. It aspires to ensure inclusive and equitable quality education, and intends to promote lifelong learning opportunities for all, as specifically stated by the UN [1]. This fluidity within the definitions and conceptions of ‘quality education’ as SDG 4 may be viewed positively. It is evident from the position of the International Children’s Emergency Fund (UNICEF) and indicates that the interpretations of quality education can (and perhaps should) be open for change and progression since information, contexts, understandings, and challenges are constantly changing [3]. At the same time, the conceptual vagueness of quality education has its drawbacks. For instance, assessing quality education can be challenging due to conceptual elusiveness, and subsequently, planning interventions to improve quality education may potentially miss the mark. Therefore, the current study investigated education stakeholders’ conceptualizations of quality education in relation to sustainability in teacher education during online webinar discussions.

Webinars, or online seminars, are interactive sessions where students and instructors connect live from different locations using virtual platforms [4]. These sessions enable real-time interaction through voice-over-internet protocol and webcam technology, thereby facilitating synchronous communication despite geographical distances [4]. Various online platforms such as Microsoft Teams (developed by Microsoft Corporation, headquartered in Redmond, Washington, USA), Zoom (developed by Zoom Video Communications, Inc., based in San Jose, California, USA), and Blackboard Collaborate (developed by Blackboard Inc., Washington, D.C., USA and now owned by Anthology Inc., Boca Raton,

USA) are also used to conduct webinars. The Teach4Reach 1.0 project used some of these platforms including Blackboard Collaborate (Version 22.10) and Zoom (Version 5.11.x) to encourage discussion and research regarding the 2030 Agenda. It allowed interaction between geographically distant and wide-reaching audiences, field experts, and education stakeholders in the Global North and South.

The advantages of webinars include promoting interprofessional communication and teamwork, permission for communication and collaboration between physically distant groups in real time, and time and cost savings associated with travel [5]. However, some disadvantages of online meeting platforms (such as webinars) include threats to participant privacy and data sharing, as sensitive data is shared with the attendees and the platform itself. (These aspects are further discussed in the Limitations Section.). Online environments supported this research as a practical solution and tool that can be used to help geographically isolated global citizens collaborate [6] while discussing shared concepts, *inter alia* quality education. Drawing from the insights gathered during these discussions, we inductively addressed our research question: How do education stakeholders conceptualize quality education in the context of sustainability?

QUALITY EDUCATION AS MULTIDIMENSIONAL

Quality education is a multidimensional phenomenon in that it can be an outcome, a property, or a process [7,8]. It can be regarded as an outcome of a particular process, while it may also be regarded as the inherent worth of education [9]. Agnihotri [10] suggests that quality education means education that serves each learner pedagogically and developmentally in an inclusive manner, whereas Gutium [11] links quality education to competitiveness in the world market of educational services. The United Nations Educational, Scientific and Cultural Organization (UNESCO) [12], in turn, regards quality education as an important lever to fight exclusion and foster social cohesion based on ethics and respect for others.

SDG 4 on quality education aims to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all” ([1], p. 19). The UN suggested that governments should prioritize education to achieve all the SDGs [13], whereas Andersen et al. [14] stress the positive impact of education on various health, environmental, economic and social outcomes. Despite general consensus on the positive impact of quality education on an individual and systemic level, pertinent definitions of ‘quality education’ remain fluid (as with the other SDGs) and are frequently ambiguous and highly context dependent. Some scholars [9,15] argue that ‘quality’ is reflected by a range of indicators such as the percentage of government spending on education, the size of student-teacher ratios, the level of teacher qualifications, student test scores in

universal assessments, the length of time students spend in school (time-on-task), and the quality of virtual education.

Biesta [16] critiques both narrow and broad agendas for education, treating them as a means to achieve external goals—whether in terms of economic productivity or social justice. This resonates with the tenets of SDG 4, where education is often used as a tool for achieving sustainability without sufficient attention given to intrinsic values and practices. Biesta [16] further explores the integrity of education, and offers a critical view on evaluating quality education based on SDG 4. He argues for reclaiming the autonomy of education with its own goals, emphasizing the need for policies and research to be grounded in educational values rather than external pressures [16].

Quality education is framed in terms of different models that are influenced by measurement and outcome conceptions [8,17] and Unterhalter [18] agrees that the concept of ‘quality education’ is open to interpretation. Prior to the launch of the 2030 Agenda, the Global Education Monitoring Report [19] stated that quality education refers to the improvement of “all aspects of the quality of education and ensuring excellence of all, so that recognized and measurable learning outcomes are achieved by all, especially in literacy, numeracy, and essential life skills” (p. 84). This definition indicates the complexities involved in defining quality education in that it is simultaneously highly specific (e.g., ‘literacy, numeracy, and essential life skills’) and vague within its comprehensiveness (e.g., ‘all aspects of the quality of education’). In this regard, Unterhalter [18] suggests that quality should be associated with equality and values in education by linking sustainability, global citizenship, and skills for decent work with education. In the current study, quality education is therefore viewed as a multidimensional concept in and of itself, with different aspects influencing the process of quality education. As such, the targets and indicators inherent to SDG 4 within the 2030 Agenda bear relevance.

Aspects that play a role in SDG 4, i.e., quality education achievement, include targets and indicators [1], formal educational aspects such as teachers and teacher educators, values including social justice, coherence, and context. SDG 4 encompasses seven targets related to universal primary and secondary education, early childhood development and universal pre-primary education, equal access to technical/vocational and higher education, relevant skills for decent work, gender equality and inclusion, universal youth literacy, and the knowledge and skills that should be fostered in learners ([1], p. 19). These seven targets can be achieved via three means of implementation: ensuring effective learning environments for everyone, providing scholarship opportunities for higher education studies, and increasing the availability of qualified teachers [1,20,21].

Teachers are fundamental to providing quality education, which is why the focus is on teacher education and the overall quality of teachers. The

Global Campaign for Education [20] asserts that teachers are essential for guaranteeing quality education in schools, and Eloff et al. [22] agree that teachers are positioned to support education for sustainable development. Darling-Hammond [23,24] emphasizes that robust teacher preparation—especially programs that tightly integrate coursework with extended clinical experiences—leads to more confident, effective, and committed educators. Hence, the empowerment of teachers is of paramount importance. Teachers should be continuously motivated, adequately recruited and remunerated, professionally trained, qualified, and supported within well-resourced schools to ensure the delivery of quality education [25].

Higher education is crucial in promoting sustainability and must engage with the SDGs to bring about social change and transformation [26,27]. In this context, teachers are key to maintaining quality in education. According to Darling-Hammond et al. [28], teacher quality encompasses the personal traits, skills, dispositions, attributes, and understanding that an individual brings to the teaching profession. To achieve this quality, teachers need a solid foundation in both content and pedagogical knowledge, as well as an understanding of their students and strong diagnostic skills. Kennedy et al. [29] concluded that quality in teacher education is a complex issue on a national, institutional, and individual level. This demonstrates the necessity of examining this issue more closely.

Context plays a role in conceptualizing quality education, since quality education is also viewed as being contextual [30,31]. Related to higher education, Vlasceanu et al. [32] state:

“Quality in higher education is a multidimensional, multi-level, and dynamic concept that relates to the contextual settings of an educational model, to the institutional mission and objectives, as well as to specific standards within a given system, institution, program, or discipline.” (p.70).

Quality education can also be linked to school improvement in terms of policy making and policy implementation coherence. Honig and Hatch [33] discuss the bridge between policy and practice and state that coherence must be redefined as an evolving interaction. In their view, coherence is a process that entails collaboration between schools and district central offices (policymakers) to align external demands with schools’ unique goals and strategies [33]. Furthermore, Robinson et al. [34] highlight coordination and coherence in implementing school improvement initiatives, and they support the conclusion reached by Honig and Hatch [33], namely that structured interactions and leadership should be emphasized in enhancing educational outcomes. This underscores the need for more strategic approaches in education management to effectively guide and utilize interactions for school improvement to render quality education.

Quality education is a globally relevant concept, and therefore collaboration and dialogue are essential [35]. Livingston [8] underscores

the essence of engaging in dialogue with diverse education stakeholders to advance the quality of education, particularly in a landscape where educational standards are increasingly intertwined with technological advancements [36]. Reflecting this perspective, the current project involved a series of expert-led webinars to facilitate rich, interactive discussions among teachers, educators and field experts. This helped to elucidate how quality education is conceptualized in relation to sustainability within teacher education.

PROJECT BACKGROUND

The Teach4Reach 1.0 project reflected on the 2030 Agenda as part of a two-year webinar series on teacher education in the Global South and the Global North. The collaborative project between universities in South Africa and Austria—funded by OeAD (P008_South Africa)—positions teacher education as a crucial pivot for achieving the SDGs. The project aimed to raise awareness in teacher education by constructing future-focused research agendas, strengthening international collaborative networks in teacher education, and encouraging interdisciplinary scientific knowledge. International webinars for education stakeholders (e.g., pre- and in-service teachers, teacher educators, and policymakers) created the opportunity to discuss how teacher education curricula can be designed to support the achievement of the SDGs by using quality education as a navigational marker.

The commencement of the Teach4Reach 1.0 research project coincided with the development of webinars that focused on the role of teachers in supporting the 2030 Agenda and the SDGs. Each webinar focused on a specific SDG. Even though the project focused on SDGs 3, 4, 5, and 10, the current study analyzed data from the first three webinars based on SDG 4 (Quality education), SDG 5 (Gender equality) and SDG 10 (Reduced inequalities) [1]. The research question was formulated as follows: “In which ways do education stakeholders conceptualize quality education in relation to sustainability?”

MATERIALS AND METHODS

The aim of the current study was to conceptualize quality education in relation to sustainability within teacher education by drawing on focus group data. This occurred during the discussion of SDGs 4, 5 and 10, which focused on the topics of sustainability, quality education, and equality in online environments with education stakeholders. Online environments assist education stakeholders in collaborating beyond geographical barriers and nurture the exchange of ideas that can enhance the quality of education in varying contexts. Thus, online environments have become integral in discussing essential topics in a global context.

While the concept of quality education frequently permeates education policy and strategic vision documents, pertinent definitions of quality education have shifted over time. They are fluid in constituent

components and deeply connected to contexts. In addition, discussions on quality education are habitually localized and dependent on face-to-face interactions. The current study sought to contribute to the understanding of quality education by engendering global views and accessing them via online modes of communication.

Data Collection

The current study adopted an interpretive approach and investigated the conceptualization of quality education in relation to sustainability in the context of teacher education. To address the research question, international education stakeholders were invited to freely share their views with their peers in an online environment. Participants were recruited using a snowball sampling technique. Apart from directly contacting educational institutions and stakeholders in several Global North and South countries, participants were invited to join and share the link to the webinar via social media. Three online webinars were held over a period of 16 months using Zoom and Blackboard Collaborate. Table 1 represents the world region and country affiliations of those participating in the webinars.

Table 1. World region and country affiliations of those who participated in the webinars.

| Continent | Webinar 1 | Webinar 2 | Webinar 3 | Total from Each Continent |
|---------------------------------|-----------|-----------|-----------|---------------------------|
| Africa * | 62 | 16 | 15 | 93 |
| Asia ** | 1 | 1 | 0 | 2 |
| Europe *** | 35 | 40 | 37 | 112 |
| Latin America and the Caribbean | 0 | 0 | 0 | 0 |
| Northern America **** | 1 | 0 | 0 | 1 |
| Oceania | 0 | 0 | 0 | 0 |
| Undisclosed | 8 | 0 | 0 | 8 |
| Total number of participants | 107 | 57 | 52 | 216 |

* African countries: South Africa, Uganda, Zimbabwe, Lesotho, Eswatini, Botswana, Mauritius, Mozambique, Kenya, and Sudan; ** Asian countries: United Arab Emirates, Singapore; *** European countries: Austria, Belgium, Germany, Italy, France, Norway, Spain, Hungary and the United Kingdom; **** Northern American countries: Canada.

In total, 216 participants (see Table 1) contributed to the three webinars. Participants hailed predominantly from Europe and Africa, which can be attributed to the project's geographic focus. The study received ethics clearance from the Ethics Committee of the Faculty of Education at the lead partner institution in the project and all participants provided informed consent to the study.

The three webinars followed a similar structure: after an introduction and a keynote speech, participants were invited to join one of several focus group discussions held in breakaway rooms to enable an open exchange in a more intimate setting. The focus group discussions were recorded and transcribed professionally by an independent scribe.

Each webinar presented five to six parallel focus group discussions for participants to choose from. Each discussion was scheduled for 45 min.

Table 2 presents the themes with guiding questions that supported the focus groups during the breakaway sessions.

The breakaway rooms closed automatically after the designated discussion time. Due to the high number of German-speaking participants, one parallel session per webinar was offered in German (see Table 2). One facilitator was present in each focus group and was tasked with recording the discussion using the integrated recording features of the respective platforms. To minimize the possibility of facilitators influencing the discussion, they were not informed about the specific research question beforehand. They were, however, alerted to the fact that the discussions would be used for interdisciplinary research on sustainability, and thematic questions to guide the discussions were provided (see Table 2). All participants consented to the study at the time of registration and were assured of their confidentiality. Due to technical issues related to the recording of one of the focus groups, a total of 15 transcripts were made for the three webinars. The transcripts formed the basis of the study and a team of seven researchers subsequently analyzed the transcribed data obtained from the focus groups.

Table 2. A summary of focus group topics and guiding questions used during the webinar series.

| WEBINAR 1 | | | | | |
|--|--|---|---|---|---|
| Theme 1 | Theme 2 | Theme 3 | Theme 4 | Theme 5 | |
| [German Parallel] | | | | | |
| How can teacher education programs be leveraged in the future to support the 2030 Agenda and the SDGs? | Welchen Beitrag können LehrerInnenbildungsprogramme zukünftig leisten, um die Agenda 2030 sowie die Ziele für nachhaltige Entwicklung zu unterstützen? | In which ways do the SDGs currently feature in teacher education programs from the Global South and the Global North? | How can quality education (SDG 4) be supported and improved via teacher education programs? | Within the framework of teacher education programs, what can a university didactic setting that realizes the SDGs, look like in concrete terms? | |
| WEBINAR 2 | | | | | |
| Theme 1 | Theme 2 | Theme 3 | Theme 4 | Theme 5 | Theme 6 |
| [German Parallel] | | | | | |
| How can teacher education programs be leveraged in the future to support the 2030 Agenda and the SDGs? | Welchen Beitrag können LehrerInnenbildungsprogramme zukünftig leisten, um die Agenda 2030 sowie die Ziele für nachhaltige Entwicklung zu unterstützen? | In which ways do the SDGs currently feature in teacher education programs from the Global South and the Global North? | How can gender equality (SDG 5) be supported and improved via teacher education programs? | Within the framework of teacher education programs, what can a university didactic setting that realizes the SDGs, look like in concrete terms? | What are the success stories on supporting SDG 5? |

Table 2. Cont.

| WEBINAR 3 | | | | | |
|---|--|---|---|---|--|
| Theme 1 | Theme 2 | Theme 3 | Theme 4 | Theme 5 | Theme 6 |
| | [German Parallel] | | | | |
| How can teacher education programs be leveraged in the future, to support the 2030 Agenda and the SDGs? | Welchen Beitrag können LehrerInnenbildungsprogramme zukünftig leisten, um die Agenda 2030 sowie die Ziele für nachhaltige Entwicklung zu unterstützen? | In which ways does SDG 10 currently feature in teacher education programs from the Global South and the Global North? | How can reduced inequality (SDG 10) be supported and improved via teacher education programs? | Within the framework of teacher education programs, what can a university didactic setting that realizes SDG 10, look like in concrete terms? | What are the success stories on supporting SDG 10? |

Data Analysis

The data was inductively analyzed by applying Kuckartz's [37] seven-step basic categorization process. At first, the full research team was presented with a randomly selected focus group transcript in which each researcher had highlighted important passages. This was followed by a group discussion during which category development was initiated. Next, the full data set of all 15 of the focus group transcripts was allocated to data analyst pairs during an in-person team meeting to conduct the first coding process. All the available data was inductively coded (see Table 2 for a summary of the focus group themes). Each data analyst pair coded between four and five transcripts. During this process, the data analyst pairs developed further categories and extracted and compiled data passages for each of the main categories to support the claims for a category. The emergent categories were discussed and grouped (where necessary) at a follow-up meeting. Emergent categories included, for instance, "Regulations", "Policies and policy implementation", "Legal regulations" and "Policy", amongst the data analyst pairs. The emergent categories were then merged.

During the second coding process, a researcher in the team coded all of the data based on the suggested category system that emerged from the inductive, collective analysis, until saturation was achieved. During this final category-based analysis, categories were grouped, resulting in the development of four key themes.

RESULTS

Findings

Quality education can be conceptualized in relation to sustainability by focusing on the following main themes constructed from the data: (1) the pivotal role of teachers and teacher educators in facilitating quality education; (2) social and educational justice in conceptions of quality education; (3) coherence in policy implementation gaps; and (4) contextual awareness in conceptions of quality education.

The Pivotal Role of Teachers and Teacher Educators in Facilitating Quality Education

Participants in this study often highlighted the role of teachers and teacher educators as a main influencing factor with regard to quality education. Teachers have the “*responsibility to produce well-rounded graduates*” (Webinar 3, Theme 1). They are described as change agents who “*have to be in front of change*” (Webinar 1, Theme 1) and must take responsibility for quality education. The participants posited that teachers have to acquire the necessary knowledge and skills on how to incorporate or use resources in integrating the SDGs in teaching: “*I think they need to concretize the practical tools to teach at school*” (Webinar 2, Theme 1). Thus, it becomes clear that empowering teachers with specific, actionable tools and strategies is crucial for them to effectively fulfill their roles in educational transformation and enhancing quality education.

Quality education was approximated to teachers’ (and implicitly teacher educators’) ability to align their practice with the values embedded in sustainability science. The participants maintained that teachers and teacher educators should not only have a high regard for and value sustainability, they should also be able to show and teach it:

“I think as an educator it’s very important that if you have these values that you also show that this is the value and this is what you want to teach to the students and this is how you want your students to grow up and you know to also follow those values” (Webinar 3, Theme 1).

This shows that teachers are considered lifelong learners who need to develop continuously to deal professionally with current and future challenges: “*Teachers should continue to empower themselves because we expect them to empower learners, so it should be that continuous learning within the teaching context*” (Webinar 1, Theme 5).

Teachers and teacher educators also need to do self-reflection. One participant highlighted a common (but inaccurate) assumption, namely that teachers inherently possess the skill and have sufficient time to engage in self-reflection about their teaching practices: “*Self-reflexivity we take for granted that teachers have the skill and the time to actually just sit down and reflect purposely on what they are doing and that may not be the case*” (Webinar 2, Theme 1). The significant focus on teachers in the data emphasizes the essence of empowering them during teacher education.

Social and Educational Justice in Conceptions of Quality Education

Social and educational justice permeated the discussions on quality education in the current study. It was discussed specifically in the context of access to education, dealing with diversity and matters of equity. Access to education was a dominant topic during the breakaway groups. The focus was on general access to a formal system and access to information: “*Access to information*” (Webinar 3, Theme 1). One of the participants stated: “*It’s about access and also making sure that we [...] address also*

issues of equity as well [as] kind of leveling the playing field" (Webinar 2, Theme 1). This statement links the idea of access to education with equity.

In this regard, teachers play a role once again. Their awareness of social and educational justice and their ability to implement these characteristics in their teaching were highlighted. Social justice was regarded as an integral part of the curriculum: *"The one is really looking at issues of social justice and how that social justice is represented in our curriculum, in pedagogy, in skills development with teachers"* (Webinar 2, Theme 1). The remark suggests that teachers play a wider role than only having the necessary knowledge and skills in teaching the SDGs.

Participants believed that social justice and equity themes should be explicitly addressed in class to increase learners' sensitivity. They indicated that this might include reflections on their own life and experiences and help them realize that *"history matters"* (Webinar 2, Theme 6). The themes that participants highlighted for classroom discussion of social justice included gender issues, dealing with stereotypes, discrimination against women, and the impact of social background, culture, language or individual identity on personal choices. Here, discrimination relating to gender was mentioned: *"Obviously, we have to talk about discrimination of girls and women and of obstacles that they face"* (Webinar 2, Theme 6). Furthermore, stereotyping social backgrounds, language and culture were seen as traumatic for students: *"You struggle most of times against a social stereotype, the social background which is not very easy to overcome"* (Webinar 2, Theme 6).

Concerning equity and diversity, the participants highlighted different skills that support social and educational justice. They referred to values essential for quality education, such as respect and being open-minded: *"Respect for others and also you know a culture of being open-minded."* (Webinar 3, Theme 1). Solidarity was another topic raised in the discussions: *"I think also solidarity is a value that should be taught"* (Webinar 3, Theme 1).

Coherence in Policy Implementation Gaps

Participants argued that although education policies that support quality education were often in place, they were not necessarily reflected in education practices in classrooms and learning environments. They believed that such policies play a crucial role in ensuring quality education. The education stakeholders involved in this study highlighted several challenges and needs concerning policy implementation, and warned: *"We are running out of time"* (Webinar 3, Theme 1). Participants suggested that policymakers often have too little knowledge on dealing with current requirements for quality education, specifically as far as sustainability is concerned.

They felt that there was insufficient action on a policy level and insisted that *"policy implementation has to be strengthened"* (Webinar 2, Theme 1). As such, participants implied that there was a reciprocal divide between

policy and policy implementation in the classroom: *“We have a policy, we have curriculum policies, we’ve got health promotion policies, that all reflects these values, but we don’t see it happening in the classroom, so there’s definitely a divide between policy and implementation in the classroom”* (Webinar 2, Theme 1). This indicates that the lack of implementation in the classroom is a challenge.

The findings suggest a need for more discussions concerning quality education with and among stakeholders such as teachers, teacher educators, school leaders and policymakers, to increase awareness on different levels. *“In our training [...] we should put it in our policies and I think we do have the opportunity or the access to actually say what happens in the schools”* (Webinar 3, Theme 1). This perceived policy implementation gap extends beyond the education sector and suggests the need for intersectoral collaboration – as was indicated by a participant in Webinar 3:

“As a teacher educator, I can only do so much in terms of awareness [...] in future teachers about the SDGs, but if I work with people in industry [...] there we have real opportunities where we can demonstrate the impact” (Webinar 3, Theme 1).

Lastly, coherence gaps and how they should be bridged between different sectors and levels were highlighted.

Contextual Awareness in Conceptions of Quality Education

Teacher educators found quality education to be closely related to contextual awareness of the proximal educational systems around schools, as well as structural changes that may be required within these educational systems. The study findings revealed the necessity to reflect on educational systems and the willingness of stakeholders to make structural changes to provide optimal opportunities for quality education. Learning from one another based on teacher education contexts was highlighted by a participant in one of the webinars:

“I think that’s where teacher education would have to go in the direction of going much more into the confrontation, into the contrast of traveling other countries, looking at other education systems, getting a sense of that for that own background” (Webinar 1, Theme 2).

Participants advocated for spaces within which new perspectives on learning can be developed, including an understanding of how to facilitate knowledge transfer. The participants equated quality education with problem-solving abilities and reflective applications of knowledge that allow for perspective shifting: *“Develop in learners the skill of solving real-life problems where we would have moved away from transmission to a more transcendental approach in teaching”* (Webinar 1, Theme 5). They also indicated that the students’ career interests should play a critical role in learning activities and steer the learning process towards what skills

they would need: *“Which skills people need that are not subject specific or job specific, but the skills people need to get along in life”* (Webinar 1, Theme 1).

Assessment was one domain in which structural changes could be considered to ensure quality education. The education stakeholders in this study specifically emphasized the importance of perspectives on assessment. They also called for innovative approaches to consider different types of students: *“I think formative assessment becomes one of the most critical pillars in the learning and teaching activity”* (Webinar 1, Theme 1). This approach could support contextual awareness by being reflexive about quality education.

Collaborative and interdisciplinary learning are considered important aspects of quality education. Participants referred to collaboration among all education stakeholders (parents, teachers or learners), thereby alluding to interdisciplinary and intergenerational learning. Interdisciplinary and multidisciplinary approaches describe the cross-thematic work that is inherent to school contexts:

“An inter- and multidisciplinary approach to teaching and learning and not to teach in silos. [...] An English teacher should be able to talk about something that is happening in business studies or in economics and how those things are related to each other” (Webinar 1, Theme 5).

A cooperative approach is essential for interdisciplinary learning. By being willing to collaborate, structural changes could take place.

The notion of school autonomy also arose within the dataset in relation to contextual awareness in conceptions of quality education. The participants agreed that school autonomy may be a global challenge: *“There is strong autonomy of teachers but weak school autonomy”* (Webinar 2, Theme 1). They indicated that the lack of school autonomy in some contexts sits in stark contrast to high teacher autonomy – sometimes within the very same context: *“Every school has the power to make autonomy choices about didactic organization, temporary organization, and economic governance, but there is a lack of autonomy”* (Webinar 2, Theme 1). The participants highlighted autonomy as an essential resource for dealing with systemic and structural challenges.

DISCUSSION

The current study (as part of the Teach4Reach 1.0 project) addressed the question of how education stakeholders from the Global North and the Global South conceptualize quality education in relation to sustainability—as introduced by the UN [1] during online webinars dealing with SDGs 4, 5 and 10. Due to societal changes and developments, it is important to focus on conceptions of quality education, especially in teacher education. This study was undertaken since conceptualizations of quality education are frequently vague or complex and do not necessarily go beyond the guidelines of the 2030 Agenda to *“ensure inclusive and*

equitable quality education and promote lifelong learning opportunities for all” ([1], p.19).

As stated earlier, the final themes concerning conceptualizing quality education in relation to sustainability that emanated from online discussions were as follows: (1) The pivotal role of teachers and teacher educators in facilitating quality education; (2) Social and educational justice in conceptions of quality education; (3) Coherence in policy implementation gaps; (4) Contextual awareness in conceptions of quality education.

Firstly, the analysis revealed that teachers and teacher educators are pivotal change agents, and despite significant challenges experienced in the education sector, they can provide quality education in terms of outcomes, processes and properties. The influence of teachers is of a twofold nature: On the one hand, they are seen as individuals bringing about change in general—for example, by acting as role-models to the students they teach. On the other hand, they are perceived as being able to influence the habits and perspectives of their students beyond mere academic learning. Darling-Hammond [23,24] emphasizes that robust teacher preparation—especially programs that tightly integrate coursework with extended clinical experiences—leads to more confident, effective, and committed educators. Therefore, teacher educators should also be educated to prepare future teachers accordingly.

Furthermore, the participants reflected on taking responsibility for providing quality education; they suggested that they should invest in their own lifelong learning and self-reflection to develop sustainable values. In particular, they expressed the desire to facilitate quality education and to present it in as practical a way as possible. This notion aligns with certain aspects required for quality teachers, as highlighted by Goodwin [38], which shows that quality education requires a multidimensional approach. Teachers must be qualified to address the unique challenges of teaching [9,15]. The current study implicitly emphasizes the importance of qualified teacher educators.

Secondly, participants in this study equated conceptions of quality education to equal access to educational opportunities, as well as to knowledge acquisition with regard to respect, tolerance, solidarity and open-mindedness. In this context, social and educational justice and the appreciation of diversity are discussed as prerequisites for equal access. Here again, teachers are seen as playing a key role in the sense that they can consider matters of equal access in their teaching practice while at the same time alerting their students to themes such as gender, stereotypes, discrimination against women, social background, cultures, and language. This finding supports previous findings that teachers and teacher educators are crucial in supporting education for sustainable development, as they might sustainably change the perceptions of their students [15,22,39]. It coincides with other findings that emphasize the

inclusive nature of quality education [10] and is supported by the essence of social justice in quality education, as discussed by Purdy et al. [40].

Thirdly, a strong component of conceptualizations of quality education was the coherence between policy making and policy implementation. Participants specifically underlined the tangible hiatus between creating and implementing policy regulations, as is frequently evident in education. In the online discussions, participants ascribed this shortcoming to the lack of guidance on dealing with current requirements for quality education in the context of sustainability. Like in earlier studies [9,15,20], the importance of effective learning environments for everyone was highlighted, as well as the value of good quality online education for higher education studies across various sectors and scientific disciplines.

The effectiveness of policy implementation in educational settings hinges significantly on the capability of leaders to interpret and act upon policy directives in ways that align with local contexts and school-specific goals [33,34]. Honig and Hatch [33] argue that the realignment of policy with practice requires a dynamic and continuous negotiation process within educational systems, and they emphasize the role of strategic leadership in fostering coherence. Similarly, Robinson et al. [34] suggest that the principal's leadership in navigating policy and practice barriers is critical to improving educational outcomes. Their research supports the current findings regarding the successful implementation of educational policies, which require not only clear and actionable policies, but also proactive and well-informed leadership at the school level to effectively adapt these policies to meet the practical demands of teaching and learning environments. This underlines the need for enhanced training and support for educational leaders (and teachers as pivotal role-players) to bridge the gap between policy creation and implementation. Care must be taken to ensure that policies are designed well through strategic planning to promote sustainable practices [41] and quality education within educational settings. O'Meara et al. [42] argue that policy and practice become coherent when there is a collaborative, reflective and dynamic relationship between the formulation of educational policies and the realities of classroom practice. This ensures that teacher education programs, assessment systems, and professional development opportunities are aligned with practical teaching needs and lead to quality education in teacher education contexts. The current study builds on these authors' ideas and emphasizes the need for collaboration on different levels as crucial for policy coherence within different institutions (such as teacher education institutions and schools).

Finally, our study found that quality education involves contextual awareness about educational systems and adequate structural changes over time. In this global online context, the participants called for contextual awareness, global exposure and collaboration (the acquisition of inter- and multidisciplinary skills), problem-solving and reflective skills, student-centered interests, and skills required to take advantage of career

opportunities. The participants also highlighted assessment innovations and autonomy—at both school and teacher level—as essential resources to deal with different systemic challenges and to implement important curricular themes such as sustainability in everyday school life.

Based on the notion that quality education is framed by various models influenced by measurement and outcome conceptions [8,17], the findings from this study can be viewed as potential theoretical departure points for the practical conceptualization of quality education. The findings also suggest the need for deeper studies in related fields such as teacher and student mobility, open schooling, curricular flexibility and interdisciplinarity. In times of change and fast development, the meaning of quality education (especially in teacher education) could be pursued and realized through various practical approaches, for instance through engagement and dialogue with diverse education stakeholders to advance the quality of education globally [8,35]. The study revealed that teachers bear significant responsibility for delivering quality education through various approaches.

LIMITATIONS

The study had limitations related to participation, sampling, and online environments. The participants were mainly from Africa and Europe, and more diverse participation from other regions could have enriched the findings. Snowball sampling limited diversity and representativeness since the participants were from similar professions and social networks. This could also lead to bias in participant selection and restrict the range of potential insights. Additionally, the use of online focus groups varied, which affected the reflection of the full group's views on the findings. In addition, the study aimed to explore how education stakeholders perceive quality education and discuss various themes related to the SDGs. While some data segments closely related to the research question, others may have been only indirectly related. The challenge of unauthorized access to meeting IDs and passwords and the issue of disrupted meetings were addressed by introducing waiting rooms where a host could allow or deny access for the online webinars. No interruptions were recorded. Other challenges associated with webinars related to the need for uninterrupted high-speed internet and bandwidth, which were not always readily available in rural or developing-nation geographic settings. Some digital screen fatigue was also encountered with longer webinars.

Future research could include comparative analysis on the inherent contextual challenges in the Global North and the Global South regarding notions of quality education. The inherent tensions and contradictions within the data-set can also be further explored.

CONCLUSIONS

This study aimed to elucidate how quality education is conceptualized in relation to sustainability within teacher education offered within online

environments. The study highlighted the multifaceted nature of quality education as perceived by the participants in a global context, linking it to teacher education since it plays a crucial role in preparing teachers for quality education. The findings show the need for a comprehensive understanding of quality education that transcends mere adherence to the 2030 Agenda goals.

Scholars such as Henard and Leprince-Ringuet [7] highlighted the fact that quality education can be regarded as an outcome of a particular process. Other authors [30,31], in turn, pointed out that quality education is viewed as contextual and multidimensional [7,8]. The current study aligns with both these views and contributes to the ongoing quest to conceptualize quality education in the following ways:

(1) Indicating the pivotal role of teachers and teacher educators in facilitating quality education since teachers are responsible not only for delivering academic content, but also for fostering an inclusive environment that promotes sustainability

(2) Inserting social and educational justice into conceptions of quality education by responding to the evolving needs of society

(3) Addressing coherence in policy implementation through effective leadership and collaboration among educational stakeholders to bridge this gap

(4) Ensuring contextual awareness when quality education is conceptualized by encouraging ongoing dialogue and engagement among diverse stakeholders

The above aspects can support teacher education by focusing on quality education perspectives gained from global participants. In summary, our research contributes to the literature on the SDGs by exploring how quality education is conceptualized (in relation to sustainability) within the context of teacher education. It also offers insights into how sustainability could be promoted by focusing on aspects such as the pivotal role of teachers, social and educational justice, coherence in policy implementation, and contextual awareness within educational settings.

DATA AVAILABILITY

The study dataset is available from the authors upon reasonable request.

AUTHOR CONTRIBUTIONS

Conceptualization, IE, A-KD, KM, SG, MRM & EA; Methodology, IE, A-KD, KM, SG, MRM & EA; Software, IE, A-KD, KM, SG, MRM & EA; Validation, IE, A-KD, KM, SG, MRM & EA; Formal Analysis, IE, A-KD, KM, SG, MRM & EA; Investigation, IE, A-KD, KM, SG, MRM & EA; Resources, IE, A-KD, KM, SG, MRM & EA; Writing—Original Draft Preparation, IE, A-KD, KM, SG, MRM & EA; Writing—Review & Editing, IE, A-KD & SG; Supervision, IE; Project Administration, IE; Funding Acquisition, IE.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest.

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