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## Assessing Pre-Service Teachers' Competencies in Teaching Basic School Science Curriculum: A Case Study

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### Abstract

The purpose of the study was to assess pre-service teachers' competencies in teaching basic school science curricula, and the challenges they encountered in teaching basic school science. A case study approach was used as the research design, which is qualitative in nature. Forty (40) research pre-service teachers were selected for the study to gain a deeper understanding of the phenomenon under investigation. The researchers used interviews and observation schedules. An observation checklist was also used during the macro-teaching to collect data by ticking appropriately between 1 and 5 on a Likert ranking scale list of the competencies pre-service teachers exhibited in the teaching process. The semi-structured interview schedule called the pre-service teachers' interview schedule (PTIS) consisted of open-ended interview questions. The interview was audiotaped, coded, and edited to find similar themes that emerged. The interview for each research participant lasted for 15–20 minutes. Thematic analysis was used to examine the data from the interviews and classroom observations. The study findings revealed that pre-service teachers demonstrated knowledge and understanding of lesson planning and delivery. Most of the schools visited for the study showed a paucity of curriculum materials for science teaching. It is therefore recommended that the government of Ghana provide adequate curriculum materials for basic school science teaching. Pre-service teachers should produce no-cost and low-cost improvised teaching and learning materials as project work. This will reduce the challenge of teaching and learning materials

in basic schools.

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**Keywords:** Pre-service teachers, competencies, science, curriculum, basic school

## **Introduction**

Assessing the competencies of pre-service teachers in the teaching of the basic school science curriculum in Ghana is an essential step toward ensuring the quality of science education in the country (Owusu-Ansah, 2017). According to Owusu-Ansah, the ability of pre-service teachers to effectively teach science is influenced by their content knowledge, pedagogical knowledge, and technological proficiency.

A number of studies have been conducted to measure the potential teachers' capacity to instruct Ghana's elementary science curriculum. Amoah, Ankoma-Sey, and Appiah (2020), for instance, assessed how well pre-service teachers knew the pedagogical material required to teach science to elementary school students. The study found that pre-service teachers lacked the pedagogical skills and subject-matter knowledge needed to instruct the subject matter successfully. Amoah and Nyarko (2021), who found that pre-service teachers lacked the skills necessary to impart science using inquiry-based methodologies, came to similar conclusions.

To address these concerns, the Ghanaian government has begun a number of reforms in pre-service teacher education through the Ministry of Education. These adjustments are made to ensure that pre-service teachers are prepared to successfully teach the basic science curriculum and to raise the bar for that preparation. For instance, the Ministry of Education recently introduced a revised pre-service teacher education curriculum that gives future educators more opportunities for hands-on training and classroom experience (Ministry of Education, 2018).

## ***Statement of the Problem***

One of the challenges faced by basic schools in Ghana is the evaluation of pre-service teachers' capacities to teach the basic science curriculum. According to UNESCO, science education is crucial to fostering sustainable development and economic growth (2021). Yet, very little research has been done on how to effectively assess pre-service teachers' science teaching abilities in Ghanaian basic schools. In order to fill this literature gap and improve the quality of science education in Ghana, this study investigates the practices used to assess pre-service teachers' ability to teach the basic school science curriculum.



### ***Purpose of the Study***

The purpose of the study was to assess pre-service teachers' competencies in teaching basic school science curricula and the challenges they encounter in teaching basic school science in Dormaa East District in Ghana.

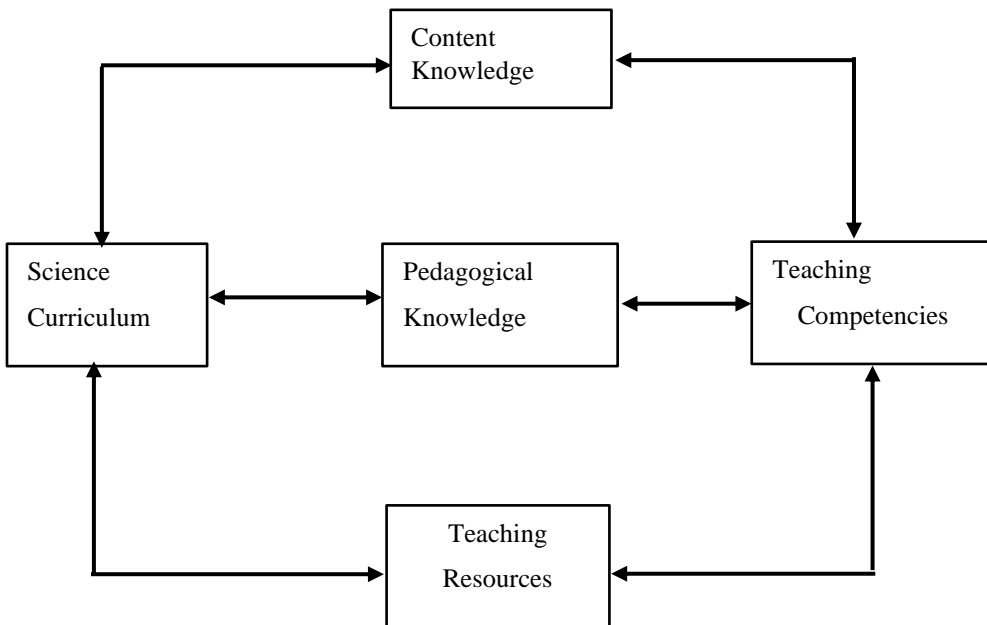
### ***Research Questions for the Study***

1. What competencies do pre-service teachers exhibit during the teaching and learning of the basic science curriculum?
2. What challenges do pre-service teachers have in teaching the basic school science curriculum?

### **Review of Related Literature**

Pre-service teachers' competencies in teaching the basic school science curriculum are essential to helping pupils acquire the necessary scientific knowledge and skills. In the Ghanaian context, the basic school science curriculum aims to provide pupils with fundamental scientific concepts and skills. According to the Ghana Education Service (2019), the basic school science curriculum comprises three major areas: physical science, life science, and earth and space science.

### ***Conceptual Framework***



**Fig.1.** (Authors' Construct, 2023): A conceptual framework for assessing pre-service teachers' competencies in teaching the basic school science curriculum at Dormaa East District in Ghana

Fig.1 shows the interconnections between competencies, science curriculum, teaching resources, content knowledge, and pedagogical knowledge, which are crucial for the effective teaching and learning of science in basic schools. Pre-service teachers must have a deep understanding of these connections to develop the competencies necessary for effective teaching of the science curriculum.

First of all, the science curriculum serves as the foundation for science instruction at basic schools (Osborne & Dillon, 2008). Therefore, for pre-service teachers to create effective instructional strategies for their students, they must have a solid understanding of the science curriculum and its goals. This understanding necessitates having a firm grasp of the material, which is knowledge of the scientific theories and principles being taught.

Secondly, pre-service teachers need to have pedagogical knowledge, which is the knowledge of teaching and learning strategies that are most effective for teaching science concepts to students (Godino, Ortiz, Roa, & Wilhelmi, 2011). They must be able to select and use the appropriate instructional strategies and approaches that align with the objectives of the science curriculum.

Thirdly, teaching resources such as textbooks, laboratory equipment, and other materials should be aligned with the science curriculum and the teaching and learning strategies used by pre-service teachers. These resources can support the teaching and learning of science concepts and principles and help pre-service teachers achieve their objectives.

Finally, pre-service teachers' competencies are, therefore, the combination of their content knowledge, pedagogical knowledge, and skills in using appropriate teaching resources. Pre-service teachers must be able to apply their knowledge and skills to develop effective lesson plans and assessments that align with the objectives of the science curriculum.

### ***Empirical Review***

In a study by Aguilar and Cortina (2020), pre-service teachers' competencies can be assessed through self-evaluation and peer observation of their teaching practices. These self-evaluation tools include observation, assessment of lesson plans, and good professional practices in the classroom. The study showed that pre-service teachers' self-evaluation and peer observation were effective tools for assessing their competencies.

In another study by Otiende and Mireri (2020), pre-service teachers' competencies in teaching science were assessed through their lesson plans. The study found that pre-service teachers' lesson plans indicated a good level of understanding of science concepts and the ability to design and implement effective learning experiences for students.

Owusu-Ansah and Tawiah (2019) also assessed pre-service teachers' competencies in teaching the basic school science curriculum through a written examination. The findings showed that pre-service teachers had a good understanding of scientific concepts, but their ability to design and implement effective learning experiences was limited.

Various assessment methods have been used to evaluate pre-service teachers' competencies in teaching and learning the basic school science curriculum (Oyoo & Indoshi, 2018; Ampiah & Amponsah, 2017; Asiedu-Addo & Opoku, 2017). According to Oyoo and Indoshi (2018), pre-service teachers' ability to accurately teach science ideas was hampered by their lack of subject expertise. Again, Ampiah and Amponsah (2017) studied pre-service teachers' competencies and assessed them using a combination of written tests, practical exams, and classroom observations. The findings revealed that pre-service teachers performed well in the written tests but struggled in the practical exams and classroom observations. Another issue that pre-service teachers encounter, according to Asiedu-Addo and Opoku (2017), is inadequate access to teaching resources.

According to the literature, pre-service teachers in low-income areas often have limited access to teaching resources such as laboratory equipment and textbooks. This lack of resources negatively impacts the quality of education that students receive. Inadequate pedagogical skills are also a challenge for pre-service teachers. Pre-service teachers frequently lack the pedagogical abilities required to teach science effectively (Appiah et al., 2020). The children's education is badly impacted by this lack of ability. In a study by Oduro (2018), classroom observations were used to assess the classroom management skills of in-service teachers who were teaching science. The study found that in-service instructors had weak classroom management skills, which could negatively affect their ability to maintain discipline and foster effective learning. Finally, a lack of interest in teaching science is another challenge that pre-service teachers face. The literature claims that many pre-service teachers are not interested in teaching science, which has a detrimental influence on their capacity to do so (Kumar & Al-Amin, 2017).

## **Methodology**

The study was analysed qualitatively. Qualitative research is a naturalistic inquiry that uses non-interfering data collection strategies to discover the natural flow of events and processes. A case study approach was used as the research design, which is qualitative in nature. The case study design is the most suitable approach as it is flexible and adaptable to processes, people, and real-life contexts. Investigating pre-service teachers' abilities to teach and learn about the basic school science curriculum is best done through

qualitative research (Creswell, 2014). Wahyuni (2012) identified three main types of case study designs: intrinsic, instrumental, and collective. This study uses an intrinsic case study design to assess pre-service teachers' competencies in teaching basic school science curricula in Dormaa East District in Ghana. Ten (10) research pre-service teachers were selected for the study to gain a deeper understanding of the phenomenon under investigation. To gather information for the study, the researchers used interviews and observation schedules. This was because the data collection methods were chosen with the qualitative nature of the study in mind, which made them simple to administer, easy to elicit responses from, valid, and reliable. It was also because of scheduling.

### ***Research Instrument***

The instruments used for the study were semi-structured interviews and observation schedules, which were constructed and structured by all three authors. According to Carter (2007), an interview involves a researcher-participant conversation that aims at helping the former gather research-relevant information. Given that it reveals pre-service teachers' everyday classroom experiences as well as their underlying beliefs, attitudes, and sentiments about the implementation of the science curriculum, an interview is thought to be one of the most effective methods for gathering qualitative research data. The semi-structured interviews were supplemented with observations for the purpose of triangulation. An observation is an important supplementary technique for research that is based on interviews, where the researcher makes notes on the observable behaviours of participants at the research site (Creswell, 2012, p. 190). The critical "watch-on" during the instructional process helped the researchers identify the strengths and weaknesses that pre-service teachers possess in science lesson presentations.

To ensure the face and content validity of the instruments, they were given to colleague post-graduate students at the University of Education, Winneba, to determine the content validity, identify any ambiguities, and also make the necessary clarifications to the items. This was to ensure that the items reflected the intent of the instruments. To ensure the reliability of the research instruments, classroom teaching observation was carried out on three different occasions for each of the research participants' lesson delivery. The reliability of the interview questions was pilot tested at Foso College of Education by the second author, who was also a tutor at the college.

### ***Data Collection and Analysis***

Pre-service teachers were interviewed using a semi-structured interview schedule known as the pre-service teachers' interview schedule (PTIS), which was created by all the authors and used to gather data from the

participants. The PTIS included open-ended interview questions that examined the pre-service teachers' capacity to teach and comprehend the basic school science curriculum. The PTIS took the form of face-to-face, free, and friendly interaction after pre-service teachers had taught specific science concepts to pupils. This exercise sought to elicit pre-service teachers' views on their strengths and weaknesses with regard to the science lessons taught. Each interview schedule lasted between 15 and 20 minutes, and the authors took turns interacting and asking questions. Between two and three pre-service teachers were observed and interviewed a day during their macro-teaching experiences.

An observation checklist was also used during the macro-teaching to collect data by ticking appropriately between 1 and 5 on a Likert ranking scale list of the competencies pre-service teachers exhibited in the teaching process. Finally, the author was assigned the pseudonym A1 and the pre-service teachers as PSt1, PSt2, PSt3, up to PSt10 for each of their responses to the interview questions, noting similarities and differences.

The competencies that were observed included a lesson plan, teaching methodology and delivery, classroom organization and management, and professional commitment. Classroom lesson observations of the 10 pre-service teachers were conducted when the basic schools were fully in session. Each lesson observed lasted approximately 40 minutes for six weeks in succession. All ten pre-service teachers were observed three times on different occasions during their macro-teaching in their respective schools of practice. The observation was systematically done, analyzed manually, and reflected on to gain valuable insights into the effectiveness of the teaching process. The interviews were also audiotaped for each of the ten pre-service teachers and played several times for transcription. Transcriptions of recorded interviews were done by listening to the taped conversations repeated and carefully writing them down with each interviewee. In all, ten pre-service teachers were observed and interviewed for a period of six weeks.

Thematic analysis was used to examine the data from the interviews and classroom observations. Finding patterns, themes, and meanings within qualitative data was done using thematic analysis (Braun & Clarke, 2006). The information was coded and transcribed. The codes were organized into themes, which were then examined to find patterns and interpretations.

### ***Ethical Considerations***

The pre-service teachers provided their informed consent prior to the data collection, and St. Ambrose College of Education granted ethical approval for the study. The pre-service teachers' anonymity and privacy were respected throughout the entire study.

### ***Results and Discussions of Research Questions***

***Research Questions 1:*** What competencies do pre-service teachers exhibit during teaching and learning of basic science curriculum?

The first research question examined how pre-service teachers used the teaching materials provided for the particular scientific course to demonstrate their subject and pedagogical expertise. The pre-service teachers interviewed provided the following responses.

*A1:* How do you plan to integrate hands-on activities and experiments into your science lessons?

*PSt 1:* I normally choose activities that align with learning objectives to help pupils develop a deeper understanding of concepts.

*PSt 2:* For the hands-on exercise, I provide all the essential materials and equipment to the pupils. I even go so far as to explain to them the instructions' safety and precautionary implications before I give out specific directions that must be followed.

*PSt 3:* As for me, I try to encourage pupils to experiment and explore with the tools and resources. By so doing pupils are given the opportunity to discuss their findings and reflect on their learning after the activity or experiment

*A1:* How will you differentiate instruction in science to meet the needs of pupils with varying levels of prior knowledge and skill?

*PSt 5:* As for me, I'll make use of flexible groupings, such as small-group instruction and peer-to-peer support

*A1:* Suggest one teaching and learning approach that you consider most effective in teaching basic school science and give a reason

*PSt 6:* Hahaha!!! I'll also go for collaborative learning. With that, pupils will develop communication, teamwork, and leadership skills while also reinforcing science concepts.

***Findings on Research Question 2:*** What challenges do pre-service teachers have in teaching the basic school science curriculum?

This research question sought to determine the challenges that aspiring teachers have when implementing the basic school science curriculum. The responses to the interview were;

*A1:* What challenges do you have in teaching the basic school science curriculum?

*PSt 6:* Hmmm, sir we don't have enough textbooks for science in this school and the pupils also can't afford exercise books for exercises.

*PSt 7:* In this school, we don't have adequate teaching-learning materials. Sometimes, I have to use my own money to buy teaching and learning materials for my lessons.

*PSt 8:* The time for the macro-teaching is small and I cannot finish my scheme of work for the term.

The interview was triangulated with classroom observation, and the following findings were identified during observation schedules:

1. Most of the schools visited in the Dormaa East District of Ghana lack basic curriculum materials for effective teaching and learning of the basic school curriculum.
2. Teaching and learning materials for science teaching and learning are inadequate for the schools visited in the district for the study.
3. Pre-service teachers have challenges at different stages of their lesson delivery with regard to the appropriateness of the teaching and learning materials to be used.
4. Pre-service teachers demonstrated good knowledge and understanding in the preparation of lesson plans.
5. Lessons observed were mostly pupil-centered.
6. The findings from the observations and interviews showed that the pre-service teachers' language was gender-responsive in the classroom because they were kind and treated men and women equally.

## **Discussions**

Regarding the research question, "What competencies do pre-service teachers exhibit during teaching and learning of the basic science curriculum?", the study's responses showed that pre-service teachers demonstrated content and pedagogical knowledge during basic school science teaching and learning. The outcome of this study on competencies pre-service teachers exhibits in the teaching and learning of the basic science curriculum was confined to pre-service teachers at St. Ambrose College of Education in Ghana. Nevertheless, this study's results supported several other studies' results that identified or worked on competencies pre-service teachers exhibit in the teaching of the basic school science curriculum that was effective at different institutional levels, different course areas, and different geographical locations in Ghana and beyond.

In research conducted in Kenya by Otiende and Mireri (2020), lesson plans were used to evaluate the readiness of prospective teachers to teach science. The study found that pre-service teachers' lesson plans indicated a good level of understanding of science concepts and the ability to design and implement effective learning experiences for students. Aguilar and Cortina (2020) found that pre-service teachers' competencies may be evaluated by self-evaluation and peer observation of their instructional strategies. In addition to observation and lesson plan evaluation, these self-evaluation methods also offer a look at the best instructional approaches. According to the study, pre-service teachers' self-evaluations and peer observations were useful techniques for determining their competency levels. Amoah, Ankoma-Sey, and Appiah (2020), furthermore, assessed how well pre-service teachers knew

the pedagogical material required to teach science to elementary school students. The study found that pre-service teachers lacked the pedagogical skills and subject-matter knowledge needed to instruct the subject matter successfully. The research findings of the study gave a contrary view to the results at hand. This is because, in this study, it was observed that the pre-service teachers demonstrated good knowledge and understanding of lesson planning and lesson delivery.

Also, regarding research question 2, "What challenges do pre-service teachers encounter in the teaching of the basic school science curriculum?". It came out that most of the basic schools visited for the study lacked textbooks and teaching-learning materials, and pupils could not afford exercise books. These findings support the study of Asiedu-Addo and Opoku (2017), who observed limited access to teaching resources as another challenge that pre-service teachers face. According to the literature, pre-service teachers in low-income areas often have limited access to teaching resources such as laboratory equipment and textbooks. This lack of resources negatively impacts the quality of education that students receive.

### **Conclusion and Recommendation**

According to the study's findings, pre-service teachers had a solid understanding of lesson planning and how to conduct lessons. The results of the study, however, suggest that pre-service teachers should receive training in resourcefulness and the capacity to improvise teaching and learning materials at no cost or at a minimal cost in order to effectively teach the basic school science curriculum, particularly in remote, disadvantaged rural areas. Again, as a matter of urgency, the government of Ghana should provide basic schools in Dormaa-East with adequate teaching and learning resources to enhance effective teaching and learning of basic school science. Finally, the duration of macro-teaching is not sufficient for efficient training of pre-service teachers in teaching basic school science.

**Conflict of Interest:** The authors declare no conflict of interest in the conduct of this study.

**Data Availability:** All the data is incorporated within the paper's content. No data has been excluded.

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**Declaration for Human Participants:** This study has been approved by: St Ambrose College of Education Academic Board in Ghana with the ethical



identification number SACE2401, and the principles of the Helsinki Declaration were followed.

### **Authorship**

All authors contributed equally during the study. Authors shared ideas during the write-up. The last author made the necessary editing and proof reading of the work.

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# Fostering Science Teaching Excellence: A Professional Learning Community-Based Model for Sustainable Teacher Development

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## Abstract

This research aimed to develop and validate a teacher development model designed to enhance science teaching within the framework of Professional Learning Community (PLC). The model was initially developed with input from five science education experts and was further refined with insights from additional experts in curriculum design, assessment, and evaluation. The effectiveness of the model was assessed through a field study involving 16 science teachers from eight schools in Roi Et Municipality during the second semester of the 2022 academic year. The research tools used included the teacher development model, a quality assessment metric for science learning, and a teacher satisfaction survey. Data analysis employed basic statistical methods, with the Wilcoxon Signed Rank Test used to validate the hypothesis that the model would improve the quality of science teaching. The results identified four key strategies for effective teaching: learning design, activity organization, use of media and resources, and learning measurement and evaluation. The model comprises six primary components: origin, objectives, principles, structure, content, and teaching process. The study found a significant improvement in the quality of science teaching, with a significant difference in quality scores at the 0.05 level. Teachers' feedback on the model was positive, with an average satisfaction score of 4.52, indicating its effectiveness in enhancing science teaching.

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**Keywords:** Teacher development, professional learning community, science education, collaborative learning, pedagogical improvement

## **Introduction**

Under the mandate of the National Education Act of 1999, science teachers shoulder the crucial responsibility of ensuring science instruction not only imparts knowledge but also instills a passion for scientific exploration among students. This duty aligns with the objectives set forth in the Basic Education Core Curriculum of 2008 (revised in 2017), which emphasizes a student-centered approach to learning. Within this framework, students are expected to actively discover knowledge, intertwining theoretical learning with hands-on processes like observations, surveys, and experiments (Office of the Basic Education Commission, 2017, p. 3). In essence, the curriculum seeks to marry knowledge acquisition with practical application. Consequently, science teachers play a pivotal role in sculpting an educational environment that fosters these twin pillars of modern scientific education (Kuptavatin, 2009).

International science knowledge test results underscore developmental needs in the quality of science instruction in Thailand. There are multifaceted challenges impeding effective science instruction in the country's basic education system. A primary concern is the shortage of specialized science teachers, a shortfall particularly pronounced in expanded opportunity schools. Many of these institutions rely on non-science majors for instruction, compromising depth and proficiency in the subject matter. Additionally, even in primary schools, there's a pressing lack of teachers specialized in science, compelling educators from other disciplines to fill this gap. This, in turn, can dilute the quality of instruction, with some teachers stretched thin across multiple subjects and grade levels. Delving deeper, many science educators struggle to seamlessly integrate substantive knowledge with pedagogical techniques. The prevalent paradigm for teacher development tends to prioritize quantity over quality and often fails to address the genuine needs of science teachers. Consequently, many educators are ill-equipped to unlock their students' full learning potential in the realm of science (Kijkuakul, 2014).

To truly enhance the capabilities of science teachers in managing learning, the development process must address the real-world challenges faced by individual schools. Every school is uniquely positioned, with its specific set of issues relating to teacher quantity, the challenges of non-specialized instructors, and instructional management. Addressing these issues demands a collaborative approach, bringing together schools, administrators, and educators to identify problems and co-create sustainable solutions. The Professional Learning Community (PLC) framework presents a strategic avenue for this development. PLC facilitates change by learning from community members' practices through knowledge sharing and reflective evaluation. It encourages educators to exchange experiences, embrace holistic learning methodologies, forge multifaceted relationships, and

bolster teamwork to improve learning management. Such collaborative engagements lead to enhanced teaching quality, promoting a culture of continual self-improvement and dedication. Importantly, a school-based PLC ensures teachers are invested in collectively-set educational objectives. As Panich (2012) and Wongyai and Patphol (2019) suggest, teachers within a PLC are more inclined to refine their teaching strategies to suit student needs, exemplifying the shift from traditional training to collective learning highlighted by Montree Yamkasikorn (2017). Such active learning from hands-on experiences, combined with the freedom to discern effective solutions, underscores PLC's pivotal role in promoting collaborative learning, innovation, problem-solving, and the identification of best practices tailored to each school's unique circumstances.

Given the pivotal role of science teachers in fostering students' scientific learning, it is imperative to continually develop their capabilities in a sustainable manner. Such developmental endeavors should stem from genuine collaboration among teachers, administrators, and stakeholders, reflecting the real-world challenges that science educators confront daily. With this in mind, the researchers seek to introduce a teacher development model based on the Professional Learning Community framework. This proposed model aims to offer a structured pathway for educational institutions to bolster the proficiency of their science educators, ensuring a superior quality of science instruction and, consequently, enhancing student outcomes.

## **Methods**

### ***Research Design and Focus***

The study targeted experts in science education and science teachers from Roi Et Municipal schools. Initially, the research engaged 5 experts in science education. This was followed by the involvement of an additional 5 experts with specializations in curriculum, teaching methods, assessment, and evaluation. In the subsequent phase, 16 science teachers from 8 different schools within the Roi Et Municipal for the academic year 2022 were incorporated. The core independent variable in this study was the model designed to develop teachers and enhance science learning using the concept of a professional learning community. The dependent variable, on the other hand, aimed to gauge the effectiveness of this model. While formulating this model, content was centered on various facets of science learning management, encompassing the design of efficient learning management strategies, the organization of suitable learning activities, the adept use of diverse media and learning resources, and the implementation of precise methods to measure and evaluate learning outcomes.

### ***Procedures***

During the initial phase of the research project aimed at enhancing the quality of science teaching, a comprehensive review was conducted, analyzing various documents and previous studies focused on both the enhancement of teacher roles in science and the principles underpinning professional learning communities. Five experts in science learning management were actively involved, offering insights based on their experiential knowledge and professional backgrounds. This phase was characterized by the meticulous design of semi-structured interviews. After a rigorous literature review, tailored interview questions were developed to address the challenges faced by science educators and to explore potential strategies for enhancing the quality of science teaching. For the creation and validation of the research tool, principles, ideas, and theories related to science education management were studied extensively. A draft of the semi-structured interview, encompassing open-ended questions, was fashioned, ensuring its alignment with the study's objectives. This draft underwent validation by presenting it to a panel of five experts to ascertain its content validity, with the Index of Item-Objective Congruence (IOC) ranging between 0.80-1.00. Feedback from these experts prompted revisions to enhance the interview's accuracy and relevance. Subsequent data analysis involved decoding expert interviews using content analysis, culminating in the formulation of a comprehensive teacher development model that integrated the principles of a professional learning community.

The second research phase pivoted towards the development of a specialized model tailored for teacher enhancement, with the aim of nurturing more effective science learning management through the lens of professional learning communities. This phase saw the involvement of five specialists, their expertise spanning across science learning management, curriculum instruction, and evaluation techniques. Delving deep into theories and concepts pertinent to teacher development and science education management, data from the first phase was synthesized into a conceptual framework. This underpinned the design of the draft model for teacher development, echoing the values and principles of professional learning communities. This model, intricately designed, encapsulated foundational principles, objectives, structural components, content, and instructional methodologies. A preliminary manual, serving as an operational guide for the model's deployment, was crafted, with an overarching goal to enhance the domain of science education by leveraging the tenets of professional learning communities. To round off this phase, tools such as the teacher development model, an operational manual echoing its principles, and a feedback form were employed to rigorously evaluate the model's alignment and efficacy in tandem with professional learning community concepts.

### ***Tool Design, Validation, and Evaluation***

In the process of establishing the model, a thorough research phase was pivotal. This involved comprehensive analysis of concepts and theories relevant to the creation of the model. Using the data from the first phase as foundational information, key components of the model such as its background, objectives, principles, structure, content, teaching methods, and evaluation were delineated. This established foundation facilitated the synthesis of a draft teacher enhancement model. Drawing upon methods of model development, data collection, and information from the first phase, a clear framework was crafted for the model. To ensure alignment with educational best practices, this draft model was subjected to scrutiny by a panel of five distinguished experts spanning domains of science education, science learning management, and academic learning. Their feedback resulted in targeted refinements to the model.

Alongside the teacher development model, an operational manual was conceptualized to offer clear guidelines for its application. After exhaustive study of relevant principles, theories, and concepts, the manual was organized into two sections: the first elucidating the teacher development model and its aim to promote science learning via professional learning community concepts, and the second delineating specific guidelines for model implementation. To ensure its robustness, the manual was examined by five experts in fields of science teaching, science education, and curriculum and instruction. Aiming for the IOC between 0.80 and 1.00, feedback from these experts led to further refinement of the manual.

The final step entailed evaluating the model's appropriateness in amplifying science education via the lens of professional learning communities. Using a plethora of concepts, theories, and principles as a backdrop, a detailed assessment tool was formulated. Designed specifically for the enhancement of the teacher development model in science education, this tool zeroed in on its fundamental elements, applications, and tangible outcomes. Adopting a stringent evaluation criteria, the tool was segmented into four distinct standards: utility, feasibility, propriety, and accuracy. The tool was then presented to a panel of five experts to ascertain content validity and gauge the IOC. Feedback from these professionals steered the final refinements to ensure the tool's academic rigor and effectiveness.

### ***Instruments***

During the course of this research, several key instruments were utilized to meet the objectives. Firstly, the teacher development model was introduced, designed to enhance the quality of science education by integrating the principles of professional learning communities. This was followed by the creation of the assessment tool for science education

management quality, which was developed to rigorously assess and evaluate the standards of science education management. Lastly, the satisfaction assessment questionnaire was implemented. This tool, tailored for teachers, was constructed to measure satisfaction and gather feedback regarding the teacher development model, which emphasizes the promotion of science education through the framework of professional learning communities.

### ***Developing and Ensuring Quality of Tools***

In the second phase of the research, a model was designed to enhance science learning through professional learning communities. This phase entailed significant groundwork, beginning with the study of principles, theories, and concepts related to science learning management. This encompassed areas such as instructional design, methodologies, media utilization, resource deployment, outcome assessment, and the establishment of professional learning communities.

From this foundational research, a quality assessment tool for science learning management was constructed. This tool aligned with the research objectives and adopted a 3-level rating scale. The categorization, determined by percentages, was as follows: scores of 75% and above were considered "excellent"; scores between 51% and 74% were deemed "adequate"; and scores ranging from 0% to 50% were classified as "needs improvement." To ensure its validity, the tool was presented to five specialists, known for their expertise in areas like science teaching, science education, evaluation, curriculum, and instruction. These experts validated its content and analyzed its IOC, which sought values between 0.80 and 1.00. Based on their invaluable feedback, appropriate refinements were made to the assessment tool.

Parallely, attention was directed towards understanding teacher satisfaction concerning the newly developed model. The foundation for this exploration was set by understanding the principles, theories, and concepts that dictate the assessment of teacher satisfaction. A keen focus was maintained on the development model promoting science learning through professional learning community concepts. With this understanding, an assessment tool was crafted, intending to measure teacher satisfaction. This tool employed a 5-level rating scale, with scores between 4.51 and 5.00 indicating "highly satisfied", 3.51 to 4.50 showing "satisfied to a high extent", 2.51 to 3.50 as "moderately satisfied", 1.51 to 2.50 being "satisfied to a low extent", and scores between 1.00 and 1.50 reflecting "least satisfied." Like its predecessor, this assessment was also presented to a group of experts for validation. Their insights facilitated the final refinement of the tool, ensuring its accuracy and relevance.



### **Data Analysis**

In this study, data analysis encompassed both quantitative and qualitative approaches. Quantitative analysis involved evaluating the quality of science learning management following the implementation of a teacher development model aimed at enhancing science education through professional learning communities. This evaluation considered viewpoints from administrators, experts, and self-assessments across two rounds, utilizing the Wilcoxon Signed Rank Test for statistical assessment. Additionally, the study examined teacher satisfaction data regarding the same development model, utilizing the target group's perspectives. Mean and standard deviation calculations were compared against established criteria. On the qualitative side, content analysis was employed to scrutinize observed science learning management and teachers' reflections on learning outcomes, culminating in a structured presentation of findings.

### **Results**

#### **Phase 1**

A content analysis of relevant research documents highlighted four main development directions for enhancing the quality of science teaching and learning management: instructional design, learning activity organization, utilization of media and learning resources, and assessment and learning outcome evaluation. Detailed elaborations of these directions are presented in Table 1.

**Table 1.** The development directions for enhancing the quality of science teaching and learning management

Guidelines	Behavioral Indicators based on Guidelines
Designing Learning Management	<ol style="list-style-type: none"> <li>1. Define learning objectives that align with the curriculum.</li> <li>2. Establish learning objectives that encompass Knowledge, Process, and Application (K-P-A).</li> <li>3. Specify learning objectives that align with the content of learning and relevant knowledge.</li> <li>4. Define learning content that aligns with learning standards and performance indicators.</li> <li>5. Design learning activities consistent with learning objectives.</li> <li>6. Design diverse learning activities.</li> <li>7. Design hands-on learning activities.</li> <li>8. Design learning activities that match learners' contexts.</li> <li>9. Design activities that promote self-discovery for learners.</li> <li>10. Design activities that promote self-discovery for learners.</li> <li>11. Develop a comprehensive learning plan according to academic principles.</li> </ol>

Guidelines	Behavioral Indicators based on Guidelines
Organizing Learning Activity	<p>12. Create a detailed and sequential learning plan.</p> <ol style="list-style-type: none"> <li>1. Organize diverse learning activities.</li> <li>2. Plan hands-on learning activities.</li> <li>3. Arrange learning activities that allow learners to contribute to the topic of interest for learning.</li> <li>4. Create activities that emphasize promoting students' thinking skills.</li> <li>5. Design activities that encourage learners to formulate observations.</li> <li>6. Develop activities that promote exploration and knowledge search for learners.</li> <li>7. Implement activities that encourage learners to explain acquired knowledge from research.</li> <li>8. Structure activities that promote learners to assess knowledge gained from activities.</li> <li>9. Implement learning activities that enhance scientific process skills.</li> <li>10. Utilize appropriate teaching methods for subject areas and content.</li> <li>11. Provide opportunities for students to engage in collaborative activities.</li> <li>12. Pose questions that stimulate critical thinking.</li> </ol>
Utilizing Media and Learning Resources	<ol style="list-style-type: none"> <li>1. Choose diverse instructional materials/resources.</li> <li>2. Select instructional materials/resources suitable for the content.</li> <li>3. Choose instructional materials/resources appropriate for the learners' age.</li> <li>4. Opt for instructional materials/resources that stimulate learning.</li> <li>5. Select instructional materials/resources suitable for the learners' context.</li> <li>6. Involve learners in using the instructional materials/resources.</li> </ol>
Assessing and Evaluating Learning Outcome	<ol style="list-style-type: none"> <li>1. Design assessment tools aligned with learning objectives.</li> <li>2. Design assessment tools aligned with content and activities.</li> <li>3. Design diverse assessment tools.</li> <li>4. Define clear and appropriate criteria.</li> <li>5. Provide opportunities for learner participation in assessing learning.</li> <li>6. Offer feedback and suggestions for improvement to learners.</li> </ol>

### ***Phase 2***

A teacher development model was established, emphasizing the promotion of science learning management through a professional learning community approach. The model incorporates components such as origin,

significance, objectives, principles, structural framework, content integration, instructional process, and assessment strategy. Within the instructional process, five stages were identified: Preparation and Planning, Collaborative Learning, Collaborative Practice, Learning Management Practice, and Reflection and Application.

**Phase 3**

The efficacy of the teacher development model was evaluated by assessing the teaching practices of 16 science teachers over two rounds. The outcomes of this evaluation can be found in Table 2.

**Table 2.** The results of the assessment of the quality of science learning management practices among 16 science teachers in phases 1 and 2

Evaluation Criteria	n	Phase 1	Results	Phase 2	Results
Designing Learning Management	16	59.90	adequate	80.73	excellent
Organizing Learning Activity	16	56.60	adequate	81.94	excellent
Utilizing Media and Learning Resources	16	66.67	adequate	82.29	excellent
Assessing and Evaluating Learning Outcome	16	59.72	adequate	82.64	excellent

The study on the effectiveness of the teacher development model to enhance science learning management using the professional learning community concept found that the quality of science learning management by teachers is at a good level. The teacher development process was conducted in two phases, revealing an improvement in the quality of science learning management by teachers in the second phase compared to the first phase. This suggests that teachers have shown higher levels of development.

The results of comparing the average scores of the quality of science learning management by teachers in the overall context between phase 1 and phase 2 after implementing the teacher development model to enhance science learning management using the professional learning community concept are shown in Table 3.

**Table 3.** Comparison of average scores for science learning management quality between phases 1 and 2 post-implementation of the teacher development model

The quality of science learning management	n	Mean	S.D.	Z	p
Phase 1	16	1.78	0.16	3.24	.001**
Phase 2	16	2.45	0.11		

\*\* There are statistically significant findings at the .05 significance level.

From Table 3, a comparison of the mean scores for the quality of science learning management by science teachers, before and after the

implementation of the teacher development framework, reveals a significant improvement. The adoption of the framework, grounded in the professional learning community approach, led to notable enhancements in science learning management quality from phase 1 to phase 2.

Results from the implementation of teacher development according to the framework aimed at enhancing science learning management based on the professional learning community approach indicate the following outcomes.

### ***Phase 1***

#### **1. Areas of Excellence**

- **Curriculum Design:** Teachers were able to align learning objectives with the content of the curriculum. Activity designs promoted collaborative student engagement. Lesson plans addressed all essential components.
- **Activity Organization:** Emphasis was placed on student-centered activities that fostered cooperative learning. Group activities were well-structured, positively reinforcing, and age-appropriate.
- **Use of Resources:** Teachers appropriately selected resources that matched the content and students' age. Resources were accurate and presented step by step.
- **Assessment:** Teachers design measurement tools and assessment strategies aligned with learning objectives. Students were briefed before evaluations, and teachers used assessment results for student development.

#### **2. Areas for Improvement**

- **Curriculum Design:** The specification of learning objectives did not comprehensively cover process skills and desirable attributes. The determination of learning content did not adequately address the assessment criteria, often relying heavily on textbooks from various publishers. The design of learning activities was still lacking in diversity.
- **Activity Organization:** It was advisable to arrange activities that enhanced the process of inquiry and allowed students to derive knowledge from their own activities. Furthermore, providing opportunities for students to define topics or subjects of their own interest was crucial. The design of activities should have focused on fostering scientific process skills and providing students with opportunities to practice them.
- **Use of Resources:** Opportunities were provided for students to participate in using media and for diversity to be present.

- Assessment: The design of measurement tools and assessment should have had well-defined and clear criteria, incorporated interval measurements, and provided feedback to students.

## ***Phase 2***

### **1. Areas of Excellence**

- Curriculum Design: Teachers were able to set learning objectives comprehensively across all domains (knowledge, skills, and attitudes). They aligned the content with the learning standards and indicators, designed learning activities that engaged students in practical tasks that correspond with the learning objectives, and created detailed lesson plans with all components.
- Activity Organization: Teachers organized activities that enhanced the process of inquiry, allowing students to independently summarize knowledge gained from the activities and providing opportunities for students to identify topics or subjects of interest. They were able to formulate age-appropriate questions, stimulating students' thinking and encouraging them to practice generating questions based on the lesson.
- Use of Resources: Teachers were able to select and use appropriate and interesting media and learning resources, allowing students to actively participate in using the media.
- Assessment: Teachers successfully designed measurement and evaluation tools that were both aligned and appropriate, with clearly defined criteria.

### **2. Areas for Improvement**

- Curriculum Design: Plans were written that did not reflect the TPACK model. Learning activities were designed focusing on practice through the process of seeking and researching knowledge, and scientific procedural skills were enhanced.
- Activity Organization: Activities were organized to reinforce scientific procedural skills, allowing students to practice and convey meaningful information. Students were also able to express their opinions based on the data.
- Assessment: The results from measurements and evaluations were used to provide feedback to students, enabling them to adjust, improve, and develop their own learning.

From the qualitative study on the quality of science learning management, through observation, note-taking, and informal interviews with

the target group, the researchers analyzed the content and concluded interesting points reflecting the results of teacher development according to the teacher development model to enhance science learning management using the professional learning community concept as follows:

“Teachers' learning activities are very interesting. They teach using the PBL method, which involves collaborative planning and designing. They receive feedback from fellow teachers and administrators and then adjust before actual teaching. In the classroom, students engage in activities, create projects, present their work, and there is a boost in students' motivation.” (Teacher 10, Reflection)

“I want to try this approach in schools. I want our students to be expressive, not afraid to answer questions.” (Teacher 7, Reflection)

“At first, I didn't understand PLC. There were policies to implement it, but I wasn't convinced because I didn't see results or any changes. It seemed like regular meetings. But today, having learned and seen the workflow and teaching management here, I'm very surprised. The atmosphere is conducive to learning, and I will adapt the new things I've learned to my school.” (Teacher 12, Reflection)

“This activity trains in a format that involves teachers. It integrates knowledge in science learning management through practical training, helping teachers understand and see how to apply it in schools. This boosts confidence in teaching, affirming that we can do it.” (Teacher 1, Reflection)

“Learning about the methods of science learning management from exemplary teachers, I saw the classroom, the role of the teacher, the learning behaviors of students, and this helped me reflect on my own teaching: what I originally did and how I can adjust, improve, and develop myself.” (Teacher 3, Reflection)

“Participating in this practical training activity with involvement made me understand the approach to science learning management and the process of PLC. This will enable me to provide accurate suggestions to teachers.” (Teacher 15, Reflection)

“I feel that attending the training is about gaining knowledge and trying out what was taught at school. I see continuity; it's not just training and then it's over, but it's actually put into real practice. I know the answers and see the direction for improvement.”  
(Teacher 11, Reflection)

“To be frank, I used to lack confidence in teaching, especially the difficult topics. I was afraid to miscommunicate with the students. But designing lessons with fellow teachers and getting feedback on areas that need improvement has increased my confidence. It might not be perfect, but there is a direction for improvement and development.” (Teacher 4, Reflection)

**Table 4.** Satisfaction findings for the science management model via professional learning communities

Evaluation item	Mean	S.D.	Interpretation
1. Teachers are proficient in managing science learning, including designing learning management, organizing learning activities, using media and learning resources, and assessing and evaluating learning outcomes.	4.56	0.51	highly satisfied
2. The content of the development covers aspects of designing learning management, organizing learning activities, using media and learning resources, and assessing and evaluating learning outcomes.	4.44	0.51	satisfied to a high extent
3. The content can be applied to organize quality science learning.	4.31	0.48	satisfied to a high extent
4. The process of conducting activities is consistent with the context of the institution/school.	4.38	0.50	satisfied to a high extent
5. The teacher development process involves teachers, administrators, and experts working together in a manner that has a good relationship and mutually supports and promotes each other.	4.50	0.52	satisfied to a high extent
6. The teacher development process in the preparatory phase promotes teachers to form teams, collaboratively analyze situations or problems, and set goals together for the development of the quality of science learning management.	4.56	0.51	highly satisfied
8. Learning from good models inspires teachers, instills confidence, and highlights the importance of developing science learning management based on a professional learning community.	4.63	0.50	highly satisfied
9. The collaborative learning phase through participatory training and learning science	4.63	0.50	highly satisfied

Evaluation item	Mean	S.D.	Interpretation
management from good model teachers helps generate ideas for quality science teaching management.			
10. In the collaborative practice phase, teachers collaboratively analyze problems and design science teaching activities together.	4.44	0.51	satisfied to a high extent
11. In the operational learning management phase, teachers receive classroom observations and exchange knowledge with each other.	4.44	0.51	satisfied to a high extent
12. In the reflection and application phase, it helps teachers to review and reflect on their own learning management. There is an exchange of knowledge among each other, leading to the improvement and development of quality science learning management.	4.63	0.50	highly satisfied
13. The measurement and evaluation of the quality of science learning management from actual practice can be genuinely applied in the classroom.	4.44	0.51	satisfied to a high extent
14. The assessment and evaluation open opportunities for teachers to participate in measuring and evaluating their own learning management.	4.69	0.48	highly satisfied
15. Feedback from the evaluation of the teacher's learning management allows the teacher to make improvements and develop their own learning management.	4.56	0.51	highly satisfied
Average	4.51	0.50	highly satisfied

From Table 4, it was found that the teachers' satisfaction with the model of teacher development to promote science learning using the concept of a professional learning community overall was at the highest level, with an average total score of 4.52. When considering the details, the top three areas where teachers were most satisfied were:

1. The measurement and evaluation process which allows teachers to participate in assessing and evaluating their own learning management. This received the highest satisfaction level with an average score of 4.69.
2. Learning from a good model inspires teachers, instills confidence, and makes them recognize the importance of improving science teaching based on the professional learning community foundation. The satisfaction here was also at the highest level, with an average score of 4.63.
3. The collaborative learning phase involving participative training and learning about science teaching from a good role model helps generate



ideas for quality science teaching. This too had a satisfaction level at the highest, with an average score of 4.63.

## **Discussion**

The development of teacher professional growth models to promote science learning using the concept of a professional learning community revealed the following findings. There are four main strategies to enhance the quality of science learning: designing learning experiences, organizing learning activities, the use of educational media and resources, and assessment and evaluation of learning outcomes. The teacher professional growth model, which utilizes the concept of a professional learning community, consists of six components: the origin and importance of the model, its objectives, foundational principles, structure, content, and instructional steps. These instructional steps are further divided into five stages: preparatory actions, collaborative learning, joint practical training, managing the learning process, and reflection and application.

This approach stems from an extensive review and synthesis of key concepts related to the components of the professional learning community. The model has been developed based on literature review, expert interviews, and a synthesis of the community's characteristics. It incorporates six essential elements: shared vision creation, collaborative empowerment, friendly community, cooperation to enhance student learning, openness to feedback, and reflective practices. All six elements are vital and interrelated, reinforcing the objective of establishing a thriving professional learning community in educational institutions, especially regarding the quality of learners (Khotthaphan, 2020).

Furthermore, this model aligns with the teacher competency standards set by the Teachers' Council of Thailand (2019), which stipulate that learning management, media/resource selection, and assessment should be part of a teacher's core knowledge and abilities. This is consistent with Office of the Basic Education Commission (2017), which states that curriculum management and learning management are part of a teacher's essential competencies, encompassing five indicators: curriculum development, knowledge and skills in designing learning, learner-centric learning management, utilization and development of innovative technological media for learning, and assessment and evaluation of learning outcomes.

Drawing on the previously discussed paradigms in Thai educational reforms, two seminal pieces of research have played instrumental roles in shaping the 21<sup>st</sup>-century pedagogical landscape in Thailand. A study by Wangmee and Naiyapat in 2017 delved deep into the competencies of Thai educators. This study revealed that among the 7 core competencies for basic education instructors, two stand out: the focus on student-centered learning

approaches and the aptitude to assess and evaluate with sensitivity to diverse individual needs.

In a similar vein, research by Khotthaphan (2020) took a closer look at strengthening science education for primary level educators. This research elucidated an advanced teacher development model anchored in the ethos of professional learning communities. A noteworthy outcome was the identification of indicators for quality science instruction. These comprised of 15 sub-indicators spread across four dimensions: 4 relating to instructional design, 6 associated with learning activity organization, 2 concerning the use of educational media and resources, and 3 dedicated to assessment and evaluation of learning outcomes. Moreover, the research proposed a comprehensive 6-component framework for the said teacher development model, incorporating the rationale, principles, objectives, content structure, a 6-step methodology termed "PLCCCA", and strategies for assessment and evaluation.

The study on the effectiveness of the teacher development model to enhance science learning using the concept of a professional learning community found that the quality of science learning management by teachers was at a good level. After two rounds of teacher development, there were improvements in the quality of science learning management between the first and second rounds. Several reasons can support the effectiveness of the teacher development model to enhance science learning using the concept of a professional learning community, as follows:

Professional learning communities create a culture of collaborative learning under positive interactions, and knowledge exchange among peers, which ultimately leads to knowledge that can be applied in future opportunities. This aligns with the ideas of Mazano (2003) and Pongthip Theparee (2014), suggesting that the culture of collaboration within schools and the professional approach among teachers can enhance student outcomes and foster deep active learning (Khotthaphan, 2020).

The development aligns with the real practice of teachers, which stems from problems teachers encounter during instruction. When teachers tackle these problems in real settings under the professional learning community concept, there's collaboration among school members throughout the process, leading to the alleviation of student-related issues. This provides teachers with a practical perspective on the professional learning community process.

Expert guidance helps teachers find pathways to enhance learning management and professional development. This aligns with Lowriendee (2013) stating that mentoring and guidance are vital processes in teacher professional development.

Participation in a teachers' professional learning community resulted in significant changes in how teachers work together, the development of a

collaborative work culture, and the creation of effective learning activities. These changes boosted the teachers' motivation and helped them overcome challenges in teaching. Five evident components of this change were curriculum, teaching methods, learning, the role of the teacher, and the subject to be taught.

After joining the professional community, teachers experienced three types of change in their beliefs and practices:

1. A change in practice without altering their original beliefs.
2. A change in beliefs without changing their practices.
3. A simultaneous change in both beliefs and practices.

These transformations benefited the improvement of lessons and student learning. A study by Khotthaphan (2020) found that teachers' science teaching quality was rated as "good", and over three cycles, there was a statistically significant improvement. Teachers were highly satisfied with this model of professional development, possibly because the school served as the base for their development, which was cost-effective and directly applicable to their students.

Wongyai and Patphol (2019) stated that effective professional development must come from within, as it forms the foundation for sustainable progress and happiness. This aligns with research by Singsan (2011), which found that teachers were highly satisfied with a development model based within schools.

## **Conclusion**

This study underscores the profound importance and effectiveness of the teacher professional growth model centered on the ethos of professional learning communities in the context of science education. Four strategies, namely designing learning experiences, organizing activities, employing educational media/resources, and evaluating learning outcomes, emerged as pivotal to enhancing the quality of science learning. The model was bolstered by its alignment with Thai education reforms and encapsulated the core competencies expected of educators. Notably, it effectively bridged the essential aspects of pedagogical development and authentic classroom challenges.

The success of this approach was observed in the notable improvements in the quality of science learning management after its implementation. The core of its effectiveness lay in fostering a culture of collaboration, deriving insights from real-life teaching challenges, and benefiting from expert guidance. Moreover, the professional learning community approach heralded shifts in teachers' practices and beliefs,

ultimately culminating in improved lesson quality and enhanced student outcomes.

It's evident that grassroots, school-based professional development not only offers practical, cost-effective solutions but also resonates deeply with teachers, leading to sustainable progress. The overarching takeaway is that the fusion of professional learning community principles with teacher development can be a formidable catalyst for elevating the quality of science education, promoting both teacher satisfaction and enhanced student learning.

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**Data Availability:** All of the data are included in the content of the paper.

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## **A Critical Review of the Plight of Teenage Pregnant Girls Displaced by the COVID-19 Pandemic in Namibian Schools**

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### **Abstract**

The phenomenon of teenage pregnancy has become a thorn in the flesh for many countries, including Namibia as many learners become pregnant while schooling. This study gives an exploratory analysis on the increased number of girls who were impregnated during lockdown. Pregnancies among learners threaten not only their human rights, but their health and social welfare, as well as the health and welfare of the children born to them. These young females often terminate their education, and this has implications for girls becoming uneducated, thereby hindering their ability to contribute to the socio-economic development of the country, as opposed to their male counterparts. This practice may lead to a perpetual cycle of the culture of poverty in which their children may further go on to become teenage parents. Using a critical review of secondary data, this study examined the higher rate of teen pregnancy among girls in Namibian schools during the COVID-19 pandemic. Numerous sources, including academic databases, scholarly journals, books, laws, policies, programs, newspaper stories, school reports, and guidelines for life skills education, are included in the literature review. The gathered data was subjected to thematic analysis in order to provide light on the difficulties that girls encountered throughout the pandemic. Therefore, this critical review paper focuses on four main areas: it presents the plight of teenage pregnancy displayed by COVID-19 in Namibia; depicts the ideas of learner pregnancy policy and life skills education guidelines; reveals factors influencing teenage pregnancy in schools in Namibia; and unpacks the implications of learners' teenage pregnancy (pertaining to human rights, health, socio-economic, psychological/mental health) on education, women and girls' empowerment agenda, and socio-economic development. The

article concludes by unveiling strategies to mitigate the scourge (the fresh ways of dealing) with the plight of teenage pregnancy in this transforming society and point out some areas for further studies. Although the answers provided by theoretical analysis are not always definitive in nature, they might provide some insights into future phenomena.

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**Keywords:** Teenager pregnancy, Life skills, Gender-based violence, Sexual abuse, Girls' empowerment, Girls' education

## 1. Introduction

Teenage pregnancy is a global concern as it affects both national and international communities. Teenage pregnancy refers to female adolescents becoming pregnant between the ages of 13-19 (Heerden-Petersen, 2015). According to the World Health Organisation (WHO, 2020), it is estimated that at least 10 million unintended pregnancies occur each year among adolescent girls aged 15–19 years in the developing world. It has been reported to be one of the main issues in every health care system since early pregnancy can have harmful implications on girls' physical, psychological, economic, and social status. In the WHO reported that 11% of all births were related to adolescent girls aged 15-19 years and approximately 95% of teenage pregnancies occur in developing countries (Indongo, 2020). Teenagers are young people aged between 10–19 years (Heerden-Petersen, 2015). During this period, an individual transform from childhood to adulthood and this is characterised by physical and psychological growth. Due to the physiological and psychological changes that take place, adolescents are interested in exploring the world around them, in which some become sexually active. This puts them at a risk of sexually transmitted infection (STIs) and pregnancy, as some young people may often lack adequate knowledge of safe sex.

In the context of Namibia, over the years, teenage pregnancy has been a thorn in the flesh of parents and educators and continues to be a societal concern. For example, Matthys (2022) report revealed that approximately one in four girls in Namibia becomes pregnant before they turn 20, as 160,800 teenage pregnancies were recorded in the country from 2010 to 2022. In recent years, the teenage pregnancy rate is higher than the rate at which learners advance to tertiary education. Furthermore, Matthys (2022) states that from 2018 to 2021, teenage pregnancies stood at 56,300, while the number of Grade 12 learners who qualified for university stood at 37480. The four Northern regions, namely: Ohangwena, Kavango East, Omusati, and Oshikoto top the most affected areas, thus highlighting the challenges that girls in the country's most impoverished regions are confronted with.

In addition, Indongo (2020) revealed that the spatial distribution of teenage pregnancy is more prevalent in Kavango region with 15.6%, followed

by Oshana region with 11.6%, and Oshana region with 3.4%. However, with the scourge of COVID-19, teenage pregnancy has escalated. Namibian schools were on lockdown from March to August in 2020 (a period of six months) due to COVID-19 pandemic. The lockdown had affected many aspects of life in the country and globally. For example, many people lost their lives due to COVID-19, while some lost their jobs and livelihood as there was no movement whatsoever, except what was essential. This closure of schools had a catastrophic impact on the society. Ngatjiheue (2020) reported that 3,323 schoolgirls were pregnant after COVID-19 lockdown. Disturbing statistics indicate that these three thousand three hundred and twenty-three school girls in Namibia became pregnant when schools were temporarily closed from March to August 2020. Unfortunately, they did not return to school when schools reopened in September 2020 due to fear and stigma. Hako and Shipalanga (2022) assert that information, whether directly or indirectly, attest to the importance of providing sexual and reproductive health and rights education to school-going adolescents. This is crucial to curb early and unplanned pregnancies and to give them a complete state of physical, mental, and social well-being in all matters relating to the reproductive system. In a span of 3 years, Namibia recorded a significant rise in teenage pregnancies among young learners in its schools. In this paper's focus, amidst the emergence of COVID-19 pandemic in 2020, various reports revealed the plight of girls during lockdown. Tafirenyika (2020), in an interview with Pontianus Musore, the Kavango East regional education director, states that:

*“Some of the common reasons that we have observed in the region leading to the contribution of teenage pregnancies during COVID-19 could be that, most of the learners were lacking control and support at home. Teenage pregnancies among learners have a detrimental effect on their school attendance, academic performance, emotional behaviour, and relationships between the pregnant girls and their peers and educators. Boy learners are not that much involved in impregnating fellow learners because they do not have money” (Tafirenyika, 2020, p.2).*

Therefore, teenage pregnancy among school-going girls is not necessarily attributable to fellow learners, but predominantly, to adult males from the community. This practice obstructs government's efforts, especially from the Ministry of Education, which recently introduced the Sexual Reproduction Health Education Program (SRHEP). Namibia, through the MoEAC, has policies and guidelines aimed at addressing ways teenage pregnancy can be mitigated. The main argument emphasises that sustainable education for all is essential for the development of any nation. The significant



number of girls battling pregnancies at a tender age poses obstacles that require critical analysis.

Therefore, this critical review paper focuses on four main areas. Firstly, it presents the plight of teenage pregnancy displayed by COVID-19 in Namibia. Secondly, it depicts learner pregnancy policy documents and life skills education guidelines. Thirdly, it draws conclusions based on the causes of the increase in teenage pregnancy during lockdown. Fourthly, the paper concludes by unveiling strategies to mitigate the scourge (the fresh ways of dealing) with the plight of teenage pregnancy in this transforming society and also points out some areas for further studies. Although the answers provided by theoretical analysis are not always definitive, they might provide some insight into future phenomena.

## **2. Methodological Considerations**

This study used a critical assessment of secondary data as its methodology to investigate why girls in Namibian schools were more likely to become pregnant during the COVID-19 pandemic. Publications were also included in the literature evaluation. To ensure a thorough understanding of the challenges faced by girls during the COVID-19 pandemic, the review commenced with a comprehensive literature search across academic databases (Eric, Google Scholar, ResearchGate), encompassing scholarly journals, books, and other reputable sources (relevant legislations, policies, programs, newspapers articles, school reports, and Life Skills Education guidelines and curricula) (Papaioannou, Sutton & Booth, 2016). A selection criterion that considered relevance, dependability, and methodological rigour was applied to studies (both domestic and foreign) that helped provide a deeper understanding of teenage pregnancy during COVID-19 (Grant & Booth, 2009). To organise findings on the influence of the pandemic on girls' education, a critical review was conducted. Important information was extracted from a selection of research conducted between 2019 and 2021, as well as relevant policies (Greenhalgh, Peacock & Manzano, 2018). The reliability of each included study was critically evaluated using rigorous quality assessments that considered the focus, period, study design, and methods (Cronin, Ryan & Coughlan, 2008). Baumeister and Leary (1997) conducted a seminal review that focused on the need for belongingness and interpersonal relationships. The secondary data they synthesised primarily pertained to studies and research related to the fundamental human need for social connection. Their analysis explored various aspects of social relationships, examining the strengths and weaknesses of individual research studies that contributed to the understanding of the need to belong. In their review, Baumeister and Leary explored research from various fields, including psychology, sociology, and related disciplines, to compile a comprehensive

overview of the significance of social connections in human behavior and well-being. The specific secondary data they analysed encompassed a wide range of studies investigating topics such as social bonds, social support, loneliness, and the impact of social relationships on mental and physical health. It is important to note that the review aimed to provide a cohesive synthesis of existing knowledge on the topic rather than presenting new empirical data. Baumeister and Leary critically examined and synthesized the findings of numerous studies to draw overarching conclusions about the fundamental human motivation for social connection. Therefore, the present critical review provided insights into the issues experienced by girls in Namibian schools during the pandemic. Based on the critical evaluation of the literature by Hemingway and Brereton (2009), this paper draws evidence-based conclusions, emphasises important themes, and proposes recommendations or implications for further study or practice. The following section is an analysis of Learner Pregnancy Policy and Life Skills guidelines to understand how teenage pregnancy ought to be handled and prevented in schools, as well as how these documents can be used to guide actions during and after COVID-19 pandemic lockdowns.

### **3. The Learner Pregnancy Policy in Namibia**

The Cabinet of the Republic of Namibia approved the Education Sector Policy for the Prevention and Management of Learner Pregnancy (ESPPMLP) and directed the Ministry of Education to implement the policy with maximum urgency (MoE, 2009). This policy applies to all primary and secondary schools in Namibia, public and private. The policy's good intention is to improve the 2001 policy, which, in view, failed to achieve the intended outcome. However, the current policy aims to prevent teenagers from becoming early parents by enhancing the implementation of preventative guidance and support from the government. It also strives to combat the social exclusion of teenage mothers. In addressing discrimination against the girl-child in schools, the Namibian education policy states that a pregnant girl may continue with her education at school, until the time of her confinement, or an earlier date based on the advice of a medical practitioner or clinic nurse.

#### **3.1 The policy above gives a pregnant girl several opportunities or options, which are summarised as follows:**

- a) The chance to remain in school while expecting
- b) The opportunity to return to the same school after twelve months (1 year) post-delivery.
- c) The opportunity to go to another school of her choice if there is space.
- d) The option to follow non–full–time schooling.

The authors proceed to examine each of these opportunities in terms of the challenges that prohibit the full implementation. The policy articulates very clearly what is required, in terms of how pregnancy learners ought to be treated (MoE, 2009; LAC, 2008).

- There should be at least one member of staff with whom the girl can discuss her situation. The identity of the teacher willing to engage in sympathetic, non-judgmental discussion and offer counseling or refer the girl to an appropriate resource should be made known.
- The girl should be obliged to reveal the identity of the responsible male. She should be made aware of the consequences of providing this information and withholding it.
- The girl may continue with her education at school, until the time of her confinement or an earlier date based on the advice of a medical practitioner or clinic nurse. After giving birth, and provided that a social worker is satisfied that the infant will be cared for by a responsible adult, the girl shall have the right of readmission to the same school within twelve months of the date when she left school, irrespective of her age.
- A girl who has left school due to pregnancy may write her end-of-year examinations, provided that she can convince the school board that her work meets the required standard.
- If she is a boarder in a government school hostel, she shall be entitled to continue in the hostel for the period that she is attending school under the same conditions as would have applied had she not become pregnant.
- These provisions are not intended as a form of punishment. They recognise that by becoming pregnant, the girl has taken on other responsibilities which must be given due attention.

However, it appears that the awareness of the policy among teachers, parents, and learners is piecemeal and its implementation is inconsistent. Some stakeholders, including parents, openly opposed the Learner Pregnancy Policy because they felt it was too lenient and seemed to promote early sexual debut and early pregnancies (Kapenda, 2012). Furthermore, while the policy considers keeping pregnant girls in school, it does not pay much attention to the academic results of these learners, as most pregnant learners tend to perform poorly due to many factors. These learners have to cope with school and the big responsibilities that come with pregnancy and preparation for parenthood. Bullying and social discomfort in the school environment can also contribute to failure, which may cause them to repeat the grade or fail.

### **3.2 Challenges for Pregnant Learners Remaining in Schools**

The policy allows pregnant learners to continue with school until four weeks before delivery, and resume school after delivery, provided that they have a certificate of fitness by a health care worker (MoE, 2009). The possibility to continue schooling during pregnancy is a great opportunity. However, pregnant girls face a lot of fear, guilt, rejection, and stigma. Nembwaya and Nghiinomenwa (2020) point out that “*Most of these girls did not return when schools reopened in September because of fear and stigma, thus abruptly cutting their schoolyear short.* It is well-documented that fear of the unknown is very high among pregnant girls. They worry about their future, health, babies, and parenting issues. Pregnant and parenting teenagers experience stigma in multiple sectors of society. They feel it at school, in medical offices and clinics, with social services, in the media and sometimes in the negative glares and even verbal assaults they receive in public.

The fact that one looks different from other learners attracts a lot of attention, labelling, stereotyping, separation, and discrimination. In addition, being pregnant while in school seems to be a confirmation of promiscuity. Although other learners might be involved in similar entanglement, they are viewed as saints just because they are not pregnant.

Furthermore, studying while pregnant is not easy and many times pregnant girls are expected to perform just like other non-pregnant learners in class. During pregnancy, ample rest is necessary. Nevertheless, studying for tests or exams can prove quite challenging when one is expecting. Teachers may have to adapt the way they teach, the way they assess, and any uniform or dress codes. Teachers and administrators ought to be sympathetic and assist pregnant girls more to give them the courage to complete their education. A lot of efforts and campaigns still need to be carried out to educate the public, schools, and hospitals/clinics on the fear, guilt, rejection, and stigma faced by pregnant/parenting girls. The negative strategies employed produce and perpetuate stigma among teenage pregnancy and teenage parenthood, which is harmful to these young parents, their children, and the society at large.

### **3.3 Learner-mother Opportunity to Return to the Same School After Post-delivery**

The opportunity to return to the same school after twelve months (1 year) post-delivery has its own merits and demerits. Hamalwa (2022) reported that the Oshikoto region recorded 1,294 teenage pregnancies over the past three years. Out of this total, 749 girls have returned to school after giving birth, whereas 545 have not yet returned. On the merit, the UN Convention on the Rights of the Child (UN, 1994) urges governments, which are part of the Convention like Namibia, to develop policies that allow learner parents to continue with their education. Some learners feel happy to be given a second

opportunity to continue with their education because such learners' parents do not have to start from the beginning. The principal and life skill teacher/counsellor, along with parents/guardians are already informed and engaged. Furthermore, there is a policy in place to guide the school regarding teenage parents.

The demerits include some learners feeling embarrassed and guilty, leading them to avoid facing teachers, principal, and other learners. Teenage parents often endure social ill such as labelling, stereotype, separation, and discrimination, which they struggle with on a daily basis. Most teenage parents are not privileged enough to either have assistance throughout or attend boarding schools. Some are uninformed about the policy of returning after post-delivery. Other reasons such as socioeconomic factors, age, and lack of family support can prevent learners from returning after delivery. Hence, girls are still at risk of dropping out even if re-entry is an option since the school environment is frequently unfriendly and unsupportive. Many studies have shown that pre-nuptial pregnancy hinders educational attainment. UNICEF (2016) study showed that most of the adolescents who drop out of school as a result of pregnancy fail to return to school, due to financial constraints and stigma. Indongo (2022) indicates that studying and looking after the baby can be overwhelming for some and they end up dropping out. Adolescent pregnancy and subsequent parenting can create major obstacles to any learner's achievement in school. However, for young women already experiencing academic failure or low levels of achievement, it can be devastating. The policy should have taken into account the effects that pregnancies can exert on the academic performance of learners.

### **3.4 Learner-mother Opportunity to go to Another School of Her Choice**

Article 12 of the UN Convention on the Rights of the Child states that *children have the right to give their opinions freely on issues that affect them and adults should listen and take children seriously* (UNICEF, 2016). In accordance with the above convention, teenagers have the right to choose another school of their choice without hindrance or denial.

The study focused on evaluating the re-entry policy for girls in six countries, particularly the case of Namibia by Kapenda (2012), which had differing views on re-entry. Specifically, the debate centered around the chance for admission to another school. Some interviewed members felt that it encouraged teenage pregnancy, while some pessimists stated that it was a waste of time (the pressing question been whether this was due to returning teenagers' inability to complete their education or a form of discrimination). Some principals expressed that *they did not want to clean up other people's mess* (implying it was the previous school's problem). In addition, most of

these learners struggle to perform well, resulting in other schools being hesitant to enroll them. Success in implementing this opportunity often depended on family socioeconomic status, enlightened principles, or academic performance. However, most learners ultimately dropped out due to a lack of opportunities to attend their preferred schools. It would have been preferable if social workers/life skill teachers facilitated this transfer.

### **3.5 The Option to Follow Non–full-time Schooling**

The most viable option for teenage parents to continue with their education is distance education. Distance education, also called distance learning, is the education of learners who may not always be physically present at a school due to various constraints. Odimegwu and Mkwanzani (2016) state that internet technology has enabled many forms of distance learning through open educational resources and facilities such as e-learning. Odimegwu and Mkwanzani further assert that distance education opportunities have proven to be as effective as face-to-face learning programmes, especially if the instructor is knowledgeable and skilled. However, most teenagers are unable to afford these distance learning programmes due to socioeconomic reasons. Unlike free government schooling, most distance education institutions require registration fees and they are privately owned in Namibia. Many teenage parents have no one to help them enroll in these abundantly available services. Some teenagers do not have the necessary skills to access the free online courses.

In such cases, making the effort to pursue education is worthwhile, given its numerous benefits for teenage parents, such as job and financial security, enabling them to support themselves and their children. It also allows teenage parents to connect with other people and feel less lonely. Schools must provide support to help young parents and pregnant teenagers to continue and complete their studies.

In addition, the 2009 revised policy, currently in effect, shortened the period of staying at home after giving birth to approximately a week. The learner is allowed to come back to school immediately after birth, provided that her condition is verified as satisfactory by a medical practitioner. The boy responsible for the pregnancy can remain at school, contrary to the provisions of the previous policy. Although the policy articulated the procedures on how learners should be treated once they get pregnant, it is silent on the ways teenage pregnancy can be prevented, especially during lockdown. In light of the above, the major gaps identified in Namibia's implementation of the Learner Pregnancy Policy are as follows:

- Lack of comprehensive, nationwide Early Unplanned Programme;
- Lack of Adolescent Friendly Health Services (AFHS);

- Lack of Sufficient efforts to engage parents on Sexual Reproductive Health (SRH) for adolescents and young people;
- Lack of standardised referral tools and procedures between schools and service providers.

#### **4. Life Skills Education Guidelines**

Due to the personal and social demands placed on learners, they are expected to cultivate life skills and receive guidance and counselling when necessary. The Ministry of Education, Arts, and Culture (MoEAC) (2016) mandated that schools with 250 learners must have at least one teacher trained in and/or experienced in life skills, guidance, and counselling to ensure implementation of the school counselling programme at the school level (MoEAC, 2016). In cases where this is not possible, a designated teacher should assume responsibility temporarily and undergo in-service professional development in Life skills education and guidance and counselling approaches. In addition to the teaching of Life Skills education, the school must allocate time and space for direct one-to-one or small-group counselling. However, this directive has no significant importance in the implementation of Life skills education in Namibia, as the situation in the regions is far from realisation, paralysing the functions of Life skills teachers/teacher-counsellors. In light of the above, there are schools in Namibia with less than 250 learners, yet these schools are submerged in social, personal, and psychological problems. Now, one has to question which aspect is more vital than the other to aid the learners. Is it the number of learners per school (250), or is it the prevailing need on ground?

Equally important, Namibia implements Comprehensive Sexuality Education (CSE) with the intention to curb early unplanned pregnancy amongst school-going children. The different approaches used to teach sexuality in schools include classroom sessions, boys' and girls' clubs and talks, counselling sessions, My Future is My Choice (MFMC), and the Window of Hope programmes (UNESCO, 2018). CSE is taught to learners in Grades 4-7. However, there are some challenges with actual implementation, as some teachers tend to prioritise promotional subjects, with CSE not being among them. As a result, personal values and attitudes often negatively impact the implementation of the intervention.

Nevertheless, the study by Hako and Bojuwoye (2019) found that the majority of schools in the regions lack sufficient trained human resources and essential materials for the implementation of life skills education and counselling services. This situation has led to underutilisation of the life skills and counselling programme in schools in disadvantaged communities, such as remote regions, consequently hindering the achievement of the programme's objectives.

On the other hand, Life skills education has long been overseen by unprofessionally trained Life skills teachers, making it challenging for them to deliver quality Life Skills lessons and provide quality counselling services to learners in need (Hako & Bojuwoye, 2019). This arrangement may have originated from the Namibian premise that every teacher is “guidance-minded”, thus anticipating every teacher in the county to perform their functions with a guidance aim.

Conversely, this arrangement has not yet yielded the much-anticipated positive results due to the Life skills/teacher-counsellors’ inability to effectively address the psycho-social and academic needs of all learners. Although Life Skills teachers/teacher–counsellors have attended workshops on basic counselling skills, which are conducted by Regional School Counsellors, they still lack critical counselling skills and techniques to handle counselling issues. For this reason, the Ministry of Education, Arts, and Culture needs to be cognisant that Life skills education is a specialised field of education. In this field, teachers require training in the theory and practice of counselling to guide learners in developing the right attitudes and competencies, enabling them to cope with educational, personal, social, and career related problems.

In addition, institutions providing teacher training should include a course on basic counselling skills for all Life Skills Career specialisation teachers, with the aim to fulfill the motto “*every teacher is a life skills teacher*”. Thus, appointing untrained Life skills/teacher-counsellors to teach Life skills subjects and provide counselling services to learners in Namibia is the main hindrance to the effective implementation of Life skills education in schools.

## **5. Factors Influencing Teenage Pregnancy During COVID-19 Lockdown in Namibia**

A wide spectrum of literature and study findings have been documented worldwide regarding adolescents’ sexual behaviour and the various causes of teenage pregnancies (UNESCO, 2018; Indongo, 2020; Heerden-Petersen, 2015; Odimegwu & Mkwanzani, 2016; Wado, Sully & Mumah, 2019). In Namibia, for example, certain cultures, customs, and traditions lead to early marriage, consequently resulting in early pregnancy (Heerden-Petersen, 2015). In such instances, pregnancy is acceptable and is most often intentional. Nevertheless, teenage pregnancy typically occurs unintentionally and can be attributed to various reasons. Factors that can lead to early pregnancy include peer pressure, “sugar daddy” relationships, lack of parental love and guidance, failure of parents to discuss sex with their children, lack of recreational activities for youth, and alcohol abuse. Some of these factors are discussed below.



### **5.1 Not Going to School (Being Idle)**

Due to restrictions on movement during lockdown, many children could not cope with idleness. Arguably, going to school helps to keep children busy for most of the day. Staying home was very straining and some youths had nothing to do other than to experiment with alcohol, drugs, and sex. Also, since many adults were no longer going to work, they mostly engaged youth in games, including sex.

Teenagers, however, do not realise the impacts alcohol and drugs have on the functioning of their brain, especially the effects of binge drinking which involves consuming large amounts of alcohol during one sitting. Drinking excessively as well as experimenting with drugs may lead to unwanted and unintentional pregnancy. These substances greatly affect a teen's ability to think logically and carry out general thinking processes, thus increasing the chances of engaging in unprotected and unsafe sexual activity (Heerden-Petersen, 2015).

### **5.3 The Socio-economic Factors and Poverty**

Many scholars reported that teens who become pregnant often come from families of low socio-economic status. For example, Nekongo-Nielsen and Mbukusa (2013) have cited poverty as one of the reasons that drive young girls to have sexual relationships with older men often referred to as “sugar daddies” for material gains, thereby putting themselves at risk of unwanted pregnancies.

Cementing the aspect of poverty and socio-economic factors, at the recent national launch of the United Nations Population Fund flagship 2022 State of World Population Report in Rundu, Rivaldo Kavanga, the deputy director of the Ministry of Education, Arts, and Culture in the Kavango East region, and chairperson of the Health Committee of the Children’s Parliament in Namibia, stated that:

*“Poverty has pushed parents to prompt their teenage daughters to have babies so that they can become beneficiaries of the teenage mothers' grant. Teenage pregnancies are exacerbated by school-going girls who are forced, by poverty, to have transactional sex to meet their basic needs. For many adolescent girls, constituting the 1.6 million Namibians marginalised by poverty, teenage pregnancies are inevitable. Namibia also continues to face an ample number of challenges, while mitigating the teenage pregnancy crisis. Efforts by the government and civil society organisations (CSOs) are commendable, but more needs to be done” (UNFPA/Namibia, 2022).*

## **5. 2. Peer Pressure and Sexual Abuse/Violence/Exploitation**

Peer pressure is another major cause of sexual abuse. Often, females may be pressured or forced by an older male partner to engage in sexual activity. These young females, out of fear, may feel forced to engage in unprotected sex with an older man driven by peer pressure. In 2021, Hamalwa of the New Era Newspaper, in an interview with the education director in Ohangwena, Isak Hamatwi, stated that:

*“The number is huge as the majority of the culprits involved in impregnating learners are cattle herders, taxi drivers, police officers, and sugar daddies. These are the people who have cash instantly available. Some parents encourage their daughters to fall pregnant for economic reasons, to have grandchildren, and also to receive bribes from the cattle herders or cuca shop owners. The sad revelation of the dialogue is that the culprits tend to force the girls to have unprotected sex for the reason that they are paying for the sex. To that end, many girls do not have any choice but to give in, and learner pregnancies remain on the rise that even primary school girls are not spared” (Hamalwa, 2022).*

The study by Indongo (2020) found that teenage pregnancy was mostly caused by peer pressure, older friends with children, poor education knowledge, fear of rejection, and desire for government social grants. Furthermore, sexual abuse is also another reason why teens may become pregnant. Some children have unfortunately been sexually abused by predators or family even before entering puberty. Early sexual abuse has been linked to later teen pregnancies (Heerden-Petersen, 2015). Young children often find themselves unable to confide in a trusted adult about their situation, due to fear of being harmed by their predators. These situations further exacerbate the lives of the children as they transition into adolescence, increasing the likelihood of teenage pregnancy.

## **5.4 Media Influence/Communication Means**

During the lockdown, schools primarily shifted to remote schooling, encompassing virtual teaching and distributed materials for self-learning or engagement through platforms such as WhatsApp. In Namibia, this led students and teachers into virtual teaching and learning situations, with the majority having no preparation for this shift. The COVID-19 pandemic significantly influenced education, making the use of online electronic media a prevalent educational tool. Detecting teenagers’ activities with their electronic media gadgets has become challenging. Parents/guardians are left feeling helpless on how to control what their teenagers do with the most

sought-after necessity of electronic communication. During this period, learners, especially girls, become a part of the risk. Most teenagers have access to cell phones, computers, televisions, and radio communication. It is widely reported that satellite communication contributes to teenage pregnancy (Odimegwu & Mkwanzani, 2016). Odimegwu and Mkwanzani further alluded that teenagers are constantly exposed to sexual images and messages through media communications and some are even addicted to such messages and images without any parental directions or guidance (Odimegwu & Mkwanzani, 2016). It is a harsh reality that many music and movies teenagers listen to and watch revolve around sex or sexual intimacy /intercourse

Given the aforementioned factors, the media has a significant impact on teenage pregnancy, especially during lockdown due to restricted movements. The demand for people to primarily use information communication technology has resulted in many teenagers spending a lot of time watching TV and listening to music. This, in turn, has led to a disturbing trend where many teenage girls sleep with older men solely to obtain a cellphone or acquire money to purchase one, even if it involves engaging in what is colloquially referred to as "cam touch." Consequently, this has contributed to the surge in teenage pregnancies during the lockdown period.

Certain television shows such as "Teen Mom" and "16 and Pregnant"(Heerden-Petersen, 2015) play a role in glamorising pregnancy while concealing the true hardships associated with it. This glamorisation tends to encourage these teens to become pregnant. Some teenage females deliberately become pregnant just so they can drop out of school or force their partners into deeper commitment. These television programmes glorify the thought of having a child by promoting the idea that teenagers can lead an adult lifestyle, with more responsibility and decision-making power.

## **6. Strategies to Mitigate the Scourge of Teenage Pregnancy in Namibian Schools**

### **6.1 Sexual Health Reproductive Programme (SHRP)**

Sexual and reproductive health and rights are critical entitlements, best supported through human rights-based approaches that empower rights-holders to claim their rights and duty bearers to fulfil their obligations. McGranahan et al. (2021) assert that every person is entitled to good sexual and reproductive health. This involves being free from sexually transmitted infections, gender-based violence, and maternal mortality, as well as being able to access essential health services. For this reason, after gaining independence in 1990, Namibia adopted the World Health Organisations Health Promoting School Initiative (HPSI). HPSI's adoption aimed to fulfill the Vision 2030 goal of ensuring equity and access to quality education for all Namibians, especially young people (MoHSS, 2015).

Namibia's School Health Programme furthermore complements the Eastern and Southern African (ESA) Commitment to Comprehensive Sexuality Education and Sexual and Reproductive Health and Rights. Such initiative strives for improved access to quality sexuality education and reproductive health services for all young people. In other words, schools are to ensure that learners are educated about the benefits and risks of engaging in early sexual activities, appropriate use of contraceptives, rights to free and informed choice in respect of sexual matters, and health care information. To achieve this goal, each school was expected to have a detailed plan that focuses on comprehensive sexuality education, teenage pregnancy prevention, and the empowerment of girls to develop decision-making skills, resiliency, and coping mechanisms.

Empowerment is a process of awareness and capacity building that leads to greater participation, decision-making power, and transformative action. Different types of empowerment include educational, economic, policy, and community support. In this review, empowerment for adolescent girls is defined to include community, educational, economic, and policy support. Through empowerment, adolescents and women are equipped with knowledge and skills that enable them to make informed choices and take control of decisions that affect many aspects of their daily lives, including sexual and reproductive health. Thus, efforts that empower adolescents are crucial in reducing adverse sexual and reproductive outcomes, such as adolescent pregnancies.

## **6.2 Family and Peer Support**

Teenage mothers can increase their resilience by receiving support from their parents and maintaining social relations with their peers. Establishing and nurturing these connections throughout pregnancy and beyond significantly influences the mother's attitude and adaptation to her new role in life (WHO, 2020). Furthermore, another protective factor that increases teenage mothers' resilience is their decision to return to school after giving birth instead of dropping out. Engaging in school work and intermingling with other peers will keep them busy, reducing the likelihood of engaging in risky activities such as substance abuse or associating with negative influences (MoE, 2010). This practice instills hope for completing their education and securing a future.

The most crucial factor overall is the teenage mother having the support of her own mother (Indongo, 2020). The mother of the teen can provide valuable emotional support, financial assistance, and aid in handling the child-rearing responsibilities of the newborn.

### **6.3 Education and Knowledge**

Education is one of the strongest predictors of health status. The more schooling people have, the better their health is likely to be and the longer their life expectancy (Freudenberg & Ruglism, 2007). From a young age, young children and adolescents must have a reliable and trustworthy adult to confide in. Having an approachable and knowledgeable role model or adult greatly decreases the chances of teen pregnancy. Parents often neglect to explain the anatomy of the body to their children. However, it is documented that providing this information and educating children during their youth is an extremely important protective factor against teen pregnancy (WHO, 2020; UNICEF, 2016).

Furthermore, children need unconditional love and support from their parents, as it is critical in ensuring the chances of making better choices regarding their future sexual activity. Having love from one's parents ensures that these adolescents are not left feeling unwanted and uninvolved. Moreover, developing a strong relationship and having open communication between a child and parent is critical, as these children are more likely to seek help in times of crisis.

### **6.4 Ubuntu- “We” culture practices and creation of Safe Havens**

Previously, African traditions had a way of bringing up children in their communities. Nowadays, the upbringing of a child in the village is entirely up to the parents and this has made the proper upbringing of children in the villages and communities cumbersome or problematic, especially to young mothers. The African adage, “It takes a village to raise/educate a child” embodies a profound truth about communal responsibility. It is highly recommended to revive this type of cultural value in our communities as a strategy to support teen mothers.

Despite all the good intervention policies that are in place, the problem persists. Ubuntu entails recognising the humanity in both children and culprits. In Mbiti's words, “*I am because we are*”, (Shanyanana & Cross, 2014), as a nation and as equals. Through Ubuntu (Uuntu), parents, teachers, and learners can avail time to support teen parents during pregnancy and afterwards to ensure they complete their studies.

In addition, older men who are reported to have been culprits in impregnating these children could change their mindsets and allow these young girls complete their studies without any hindrance. Policymakers and relevant ministries (Education, Health, Education and Safety and Security) could also amend policies addressing teenage pregnancy to include steps in confronting culprits and strategies for mitigating teenage pregnancy during lockdown and beyond.

## 7. Recommendations

For proper implementation of the Learner Pregnancy Policy, it is recommended for Namibia to:

- Provide a national Learner Pregnancy Policy awareness and interpretation among teachers, parents, and learners for common understanding and consistent implementation.
- While the policy considers keeping pregnant girls in school, it should also include mechanisms to improve the academic results of these learners, as most pregnant learners tend to perform poorly.
- Involve key stakeholders such as parents, traditional and religious leaders, other community gatekeepers, as well as teenage girls and boys in designing and implementing a national Learner Pregnancy Policy.
- Although the policy is silent on the ways teenage pregnancy can be prevented, the paper makes the following recommendations:
  - The Ministry of Education, Arts, and Culture and Ministry of Health and Social Services should strengthen Adolescents Friendly Health Services (AFHS) by training more service providers;
  - As teachers tend to prioritise promotional subjects, with CSE not being among them, the Ministry of Education, Arts, and Culture should rebrand Comprehensive Sexuality Education (CSE) as a promotional subject.
  - Create Sexual Reproductive Health programmes and messaging through social media to educate young people on teenage pregnancies and health-related issues.
  - Develop Sexual Reproductive Health referral tools and Standard Operating Procedures (SOP) to improve linkages between schools and services.
  - Organise parents' meetings to strengthen parental/guardians' relationship with their teens and improve communications to understand the thoughts and feelings of the child
  - Encourage parents to engage in discussions with teenagers to raise awareness on sexual-related matters.
  - Assist parents/guardians with communication strategies on teenage pregnancy and support systems.
  - Strengthen the use of community youth centers throughout the communities to enlighten teenagers on teenage pregnancies and sexual-related issues.
  - The Ministry of Education, Arts, and Culture should encourage and sponsor musicians to come up with sexual education music.
  - The Ministry of Education, Arts, and Culture should strengthen life skills training and provide schools with well-trained life skills teachers.

## 8. Future Research Directions

Based on the above recommendations, proposed future research areas include:

- An investigation into the possibility of changing Life Skills and Comprehensive Sexuality Education (CSE) to a promotional subject, given its importance in curbing teenage pregnancies.
- A study on the role of Sexual Reproductive Health programmes and messaging through social media in mitigating teenage pregnancies and health-related issues in Namibian schools
- A research study on parental/guardians' relationship with their teens and improved communications to understand their thoughts and feelings.

Although several studies on teenage pregnancies were conducted around the world, some of the interventions seem not to bear fruits as expected. Therefore, the study by Kinemia and Mugambi (2016) on social media and teenage pregnancy in Kenya is interesting and worth mentioning. Thus, future researchers in Namibia may investigate the following:

- How social media significantly influences teenage sex
- The media usage by teenagers at home and at school
- The materials students often engage with while using electronic media
- The type of sex texting messages teenagers sends and their activities while using the internet

## Conclusion

The study engaged in a critical review of the plight of teenage pregnant girls displaced by the COVID-19 pandemic in Namibian schools, which has become a great alarm for families. The study was based on the Learner Pregnancy Policy and Life Skills guidelines, supported by analysis of other studies and organisations, such as UNESCO, UNICEF, and WHO. It is important to enhance the training of life skills teachers and review the status of life skills to elevate it to a promotional subject. The teenage pregnancy policy was not implemented as stipulated due to misinterpretation, lack of information, and misunderstanding. The study revealed that life skills guidelines were not implemented in all Namibia schools. Furthermore, due to the non-promotional nature of the life skills subject, some teachers did not take its implementation seriously as they were sceptical about its importance. Therefore, there is a need for a more comprehensive education awareness campaign to establish policy and life skills guidelines for a common understanding among all stakeholders. In addition, attention must be given to the safety of learners and their right to access sustainable education and empowerment. Finally, it is recommended to amend the learner policy to

include suitable measures for addressing teenage pregnancy during and after the COVID-19 pandemic. Overall, the fundamental issues raised pertain to the improper implementation of general policies and legislation, despite their availability in schools. To decrease the pregnancy rate, it is essential to conduct more education and awareness campaigns, increase staff, improve accountability, and enhance the coordination of services.

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# Systematic Review of International Student Mobility in Higher Education

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## Abstract

The objective of this study is to conduct a comprehensive review of the educational sciences and social sciences literature about international student mobility that was published in the Web of Science database between 1997 and 2023. In the research, 550 publications that had been scanned by the WOS database were examined concerning their yearly publication counts, citation counts, publishing journals, cited authors, publishing and cited nations, fields of application, keywords employed, and article themes. Every article was analyzed using the Vosviewer software. It was found that 530 articles were published in the English language in terms of language of publication. The most cited articles dealt with equal chances and Erasmus student mobility. Higher education, educational mobility, and international students are the most frequently used terms in the publications, whereas distinction is the least frequently used keyword. The majority of articles on the topic are published in the Journal of Higher Education. The field of educational research published the majority of the articles. The evaluation of international student mobility in the fields of sociology, psychology, and educational administration has been rather restricted. The concept of international student mobility encompasses not only educational mobility but also movements related to social justice, inequality reduction, risk group management, and educational prestige.

**Keywords:** Systematic review, globalization, higher education, international student mobility, internationalization

## Introduction

Higher education institutions are trying to become recognized by educating international students to adapt to rapid change and improve the quality of teaching (Önder & Balçı, 2010). In wealthy nations, more and more higher education programs are opening up to student mobility. In other words,

higher education is constantly gaining an international dimension. The number of students going to different countries for undergraduate and postgraduate studies has also been steadily increasing (Aydın, 2010). International student mobility contributes significantly to the scientific research capacity of higher education institutions and increases their international competitiveness. International education is not limited to economic returns. The presence of international students and teaching staff in a university directly affects the form and quality of education. It also allows for the development of intercultural dialogue (Özgür, 2012). Developed nations that are short on skilled labor have resorted to measures that allow foreign employees to move around more easily to obtain a competitive edge in global markets. These practices include the re-establishment of course curricula for foreign students in higher education institutions, the issuance of internationally recognized documents, and the more effective use of new information and technology resources (Çelik, 2013). The leading position of developed countries in science and technology depends to a large extent on the talented scientists who come from different countries and continue to work (NAFSA, 2022; Özoğlu et al., 2012).

### ***Theoretical Framework***

International student mobility, which has increased significantly, especially since 2000, is becoming increasingly important in the world of higher education. International students offer significant opportunities in terms of both economic and human capital. For this reason, countries with advanced higher education systems compete fiercely to take advantage of these opportunities. There are many reasons behind this competition. In countries like the United States, Australia, the United Kingdom, and Canada, which have the highest number of international students, the economic contribution of these students is clear. In Canada, the total domestic expenditure of international students can even outstrip the revenues generated by the country's most important export sectors (Özgür, 2012). Due to globalization and internationalization in higher education, there is a continuous increase in student mobility around the world.



**Reference: OECD, 2022**

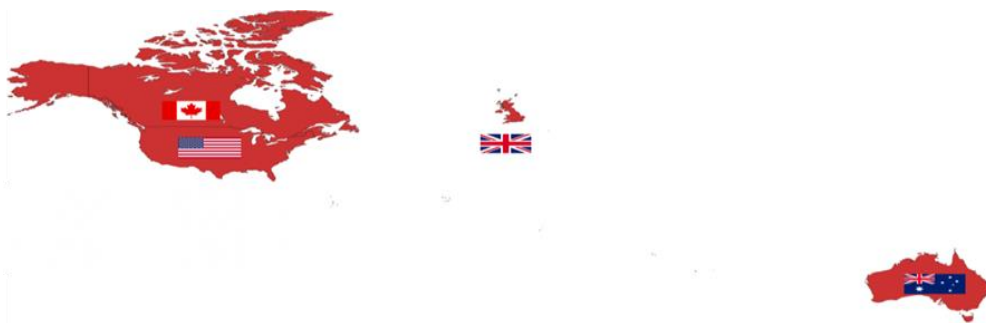
**Figure 1.** Number of International Student Mobility

According to OECD statistics presented in Figure 1, the number of international students has significantly increased over the years. According to UNESCO Statistics Institute data, the country with the highest international student mobility in the world is the United States of America with 27.8% (OECD, 2022). According to the same data, after the US, the UK ranked first with 16.3%, Australia with 9.7% and France with 8.5%. Generally, the countries preferred by international students are developed countries. Students especially prefer English-speaking countries. According to a report published by the Institute of International Education (IIE), 50% of the world's international students are located in English-speaking countries such as the US, UK, Australia, Canada and New Zealand (IIE,2018). As a result of the political, economic, and cultural changes in the world, international students who want to receive qualified education have started to search for alternative countries. This search process has been effective in increasing the number of international students in alternative countries such as China, Thailand, Malaysia, and Singapore (Bhandari & Blumenthal, 2011). Due to the rising number of international students worldwide, countries are developing various marketing strategies to establish themselves in the international student market. In the report published by the education organization Observatory, countries receiving international students are classified as follows (The Observatory,2023):

**Table 1.** International student countries category

Big Players	United States, United Kingdom, and Australia
Middle Powers	Germany and France
Developing Places	Japan, Canada, and New Zealand
Emerging Competitors	Malaysia, Singapore, and China

The economic, cultural, and qualified human resource contributions provided by internationalization in higher education have led many countries to develop international student policies. The foreign labor force working in the United States makes up 10% of the population. This working foreign population represents 25% of the United States' science and engineering workforce. Moreover, 50% of this foreign labor force holds a PhD degree (OECD,2023). International students increasingly contribute to the economy, culture, and human resources in different countries. Accordingly, countries invest in promotion to attract international students to their countries (Turkey Ministry of Development, 2020).



**Figure 2.** Countries generating the most revenue from international students

According to the UNESCO (2023) report, the USA, UK, Canada, and Australia are the countries that generate the most income from international students. Various socio-cultural and economic factors influence foreign students' choice of destination country. While the factors that determine the country where international students will study are called push factors, another factor that makes them prefer a particular country or higher education institution is called pull factors. Push factors include inadequate higher education opportunities in the student's home country, the student's desire to develop culturally and intellectually, and the desire to be employed. Attractive factors include the quality of education in the destination country, the international recognition of the higher education institution, the availability of a credit recognition system, the language of instruction, the cost of living in the country, the ease of the visa process, scholarship opportunities and employment opportunities after graduation. With the process of globalization and increasing competition in education, countries are paying more attention to developing policies on attractive factors to attract foreign students (Souto-Otero, 2013). According to Findlay and King, in push-pull theory, pull factors such as the prestige of certain countries and universities, scholarship opportunities, education, and the opportunity to work in the labor market after graduation are usually more dominant. However, student mobility can be better explained through four different conceptual frameworks: skilled migration, globalization, youth culture, and social class. International students are associated with high-skilled migration.

Globalization and high-skilled migration are highly influential in the internationalization of higher education. Globalization in higher education is directly related to the production and dissemination of knowledge around the world. Globalization in higher education increases the importance of mutual agreements in education and innovation in communication technologies. Internationalization includes specific values that have gained importance as a result of globalization. The internationalization of higher education is related to learning centers abroad, accreditation of higher education curricula,

international cooperation in scientific research, and cross-border mobility of institutions, staff, and students (Tezsürücü & Bursalıoğlu). However, when the concepts of globalization and internationalization are compared, the content of international student mobility changes. At the level of globalization, international student mobility is about student mobility abroad, while at the level of internationalization, it is about the deployment and employment of human capital across national borders. In this case, foreign students and skilled migrants are recognized as components of the internationalization of higher education in host countries (Beine et al., 2014).

### *Problem Status*

It was seen that the following keywords were mostly included in the publications on international student mobility in the searches made on databases: “Higher education, educational mobility, international students, mobility, China, students support, Europe, space, transnationalism, migration, Erasmus, distinction, regional hubs, home”. When evaluated within the framework of these keywords, it is seen that the subject is generally examined in a limited way. If a systematic analysis of studies on international student mobility is made, the process of internationalization in higher education can be evaluated more easily. A systematic analysis of existing studies on international student mobility can clearly show to what extent the issue is considered in the context of internationalization and to what extent in the context of globalization. In this context, answers to the following sub-problems were sought in the systematic analysis of the articles:

- What is the appearance of articles in terms of year of publication and language of publication?
- What is the appearance of articles in terms of the number of citations?
- What is the appearance of articles in terms of keywords used?
- What is the appearance of articles according to the country, university, and journals in which they were published?
- What is the network view in terms of authors, articles, and number of citations to journals?
- What is the appearance of the articles in terms of fields of science and topics?

### **Methods**

This study aims to determine the bibliometric characteristics of the articles on "International student mobility" in the journals scanned in the field of educational sciences and social sciences using the Web Of Science database. Bibliometrics is a field of study based on counting and is the study



of published books, journals, and articles by mathematical and statistical techniques. The analysis of certain characteristics of publications such as journal, subject, number of authors, and publication information is described as bibliometric analysis (Struck et al., 2021).

### **Research Data**

The research data and population consisted of 550 publications downloaded from the WOS database. In the study, the articles (530) scanned in the WOS database were analyzed in terms of annual publication numbers, citation numbers, publishing journals, cited authors, publishing and cited countries, keywords used, fields, and topics of the articles. At the same time, social network analysis was used to conduct a co-citation analysis of authors and journals, network analysis of keywords together, and analysis of country collaborations. Social network analysis is a method used to obtain quantitative results of relationships between people, objects, or organizations (Al et al., 2010). The Vosviewer program was used for the analysis of the documents. The bibliophily application integrated with Map was used to visualize the data. While searching the WOS database, the words "*International Student Mobility*" were used as the title and key.

### **Results**

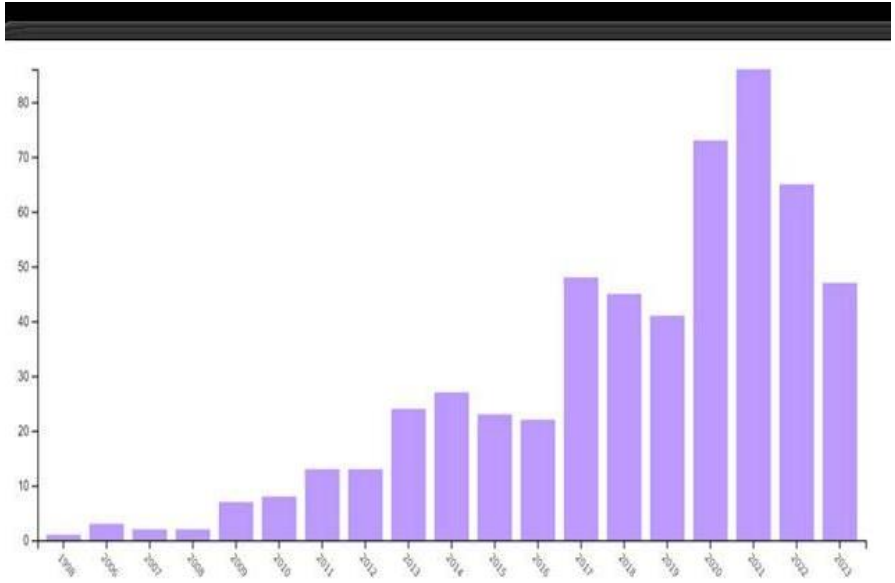
In this part of the study, data on the year of publication, language, number of citations, keywords, country, cross-country citation, country of publication, journals, cross-journal citation network, authors, the field of science, and the subject of the articles are shown in tables and figures.

**Table 2.** Data related to the articles analyzed

Article	530
Total citations	7419
Author	96
Publishing university	66
Broadcasting country	30
Keywords	184
References	2347

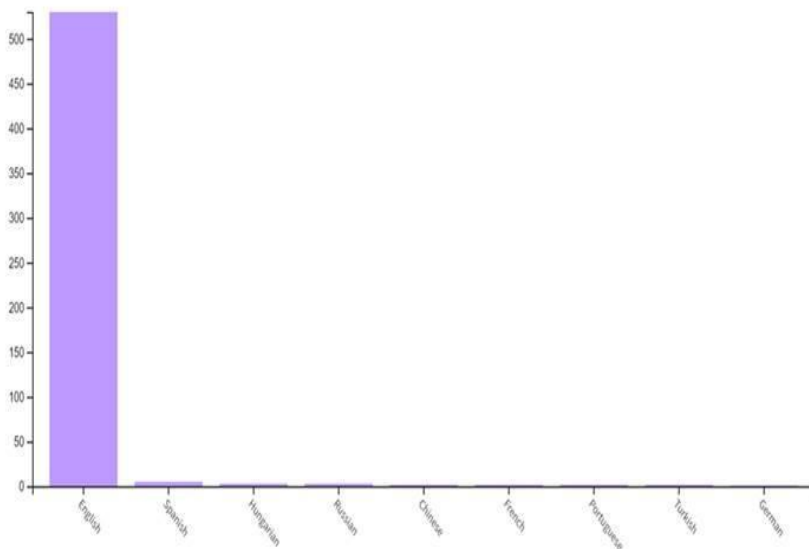
**Reference: (WOS, 2023)**

In the study, 530 articles were analyzed and the number of authors, publishing universities and countries, Keywords, and total number of references are shown in Table 2.



**Figure 3.** Number of articles on international student mobility by year

Publications on international student mobility started to increase after 1998 but increased significantly after the Covid-19 pandemic. As international student mobility has become an important competitive tool among countries, academic publications on the subject have also increased.



**Figure 4.** Publication language of articles

530 of the articles on international student mobility were published in English, 5 in Spanish, 3 in Hungarian, 3 in Russian, 2 in Chinese, 2 in French, 2 in Portuguese, 2 in Turkish, and 1 in German. It was determined that the

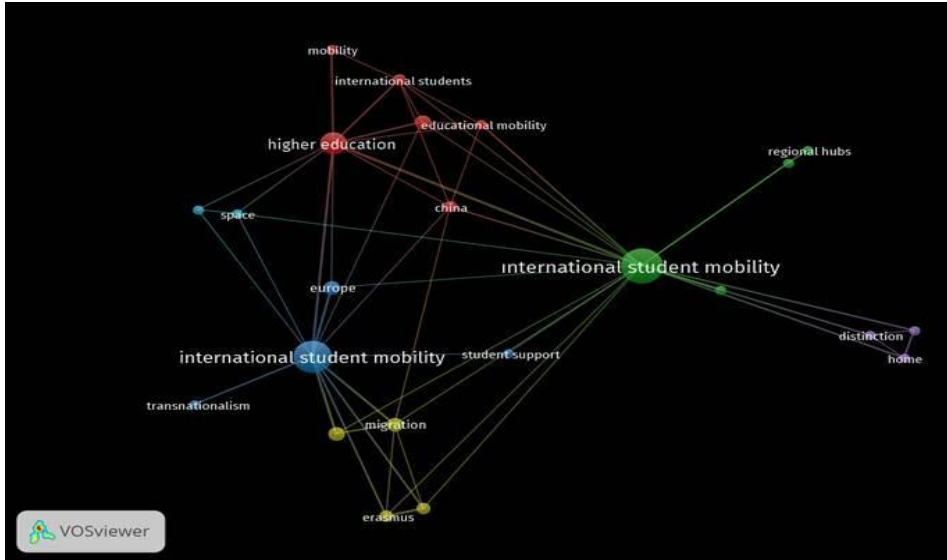
articles were generally published in English.

**Table 3.** Most cited articles

Article	Attribution
World class? An investigation of globalization, difference, and international student mobility	339
The determinants of international student mobility flow: an empirical study on the Erasmus program	173
An Assessment of Supply and Demand-side Theorizations of International Student Mobility	167
Mobility as "becoming": a Bourdieuan analysis of the factors shaping international student mobility	119
Barriers to International Student Mobility: Evidence From the Erasmus Program	111
Three waves of international student mobility (1999-2020)	106
International student mobility: the role of social networks	94
Student Mobility and Internationalization: trends and tribulations	90
Policy options for managing international student migration: the sending country's perspective	84
The emergence of a regional hub: comparing international student choices and experiences in South Korea	84

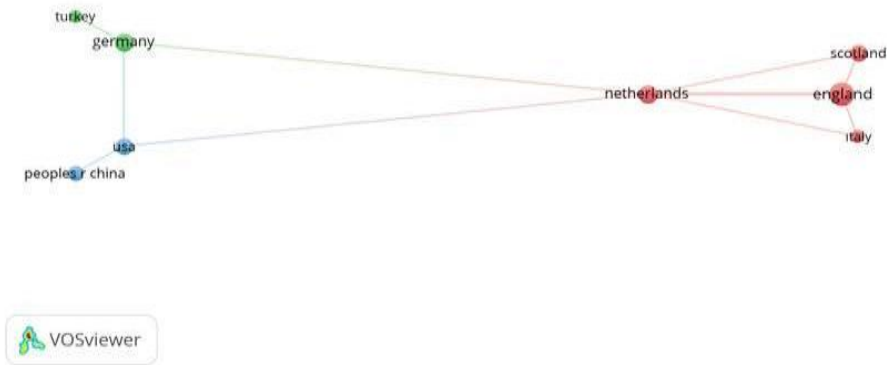
**Reference: (WOS, 2023)**

The most cited articles are on student mobility and its consequences. For example; the 339 cited article "World class? A study on globalization, diversity, and international student mobility" only discusses the concept of "world class" (Findlay et al., 2012). In this article, it is emphasized that new opportunities in education have emerged with student mobility, but inequality persists. 173 quotes from the article "Determinants of international student mobility flows: An empirical study on the Erasmus program" discusses the causes and consequences of the Erasmus program. In the less-cited articles, the contributions of student mobility for countries were evaluated. 84 cited article titled "Policy options for managing international student migration: the sending country's perspective" states that countries such as Canada and Australia, which receive student migration, benefit while countries that send students are negatively affected in terms of human resources. 84 cited article titled "The Emergence of a Regional Education Hub: Rationales of International Students' Choice of China as the Study Destination " emphasizes that South Korea is a regional hub for international student mobility and is attractive due to its English language education (Wen and Hu, 2018).



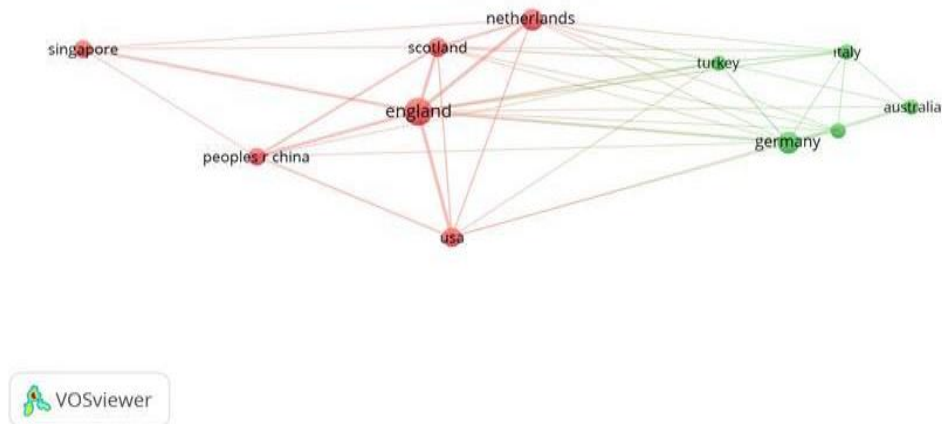
**Figure 5.** Keywords

The following keywords were used in the articles published on "International Student Mobility": Higher education, educational mobility, international students, mobility, China, students support, Europe, space, transnationalism, migration, Erasmus, distinction, regional hubs, home. Higher education is the most frequently used keyword, while distinction and regional hubs are among the less frequently used keywords.



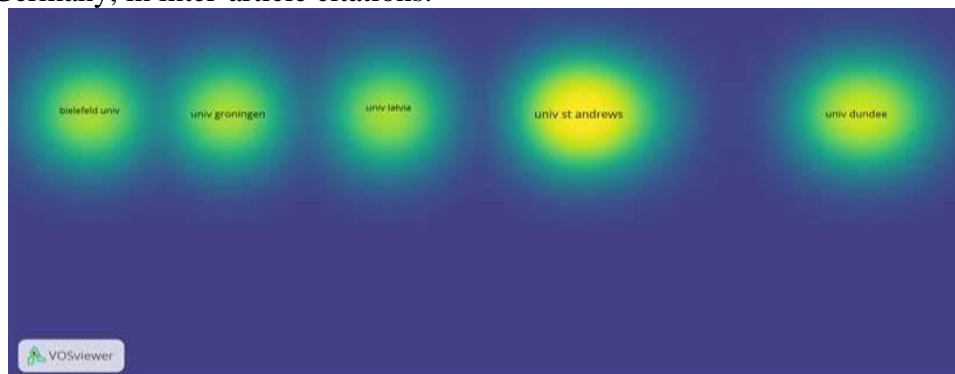
**Figure 6.** View of articles by country

The distribution of articles on international student mobility by country is listed below: 70 articles were published in England, 69 in the USA, 68 in China, 57 in Germany, 19 in the Netherlands, 18 in Scotland, 17 in Italy, and 12 in Turkey. Most of the articles on the subject have been published in countries such as the UK, the USA, the Netherlands, and Germany, where international students primarily prefer to study.



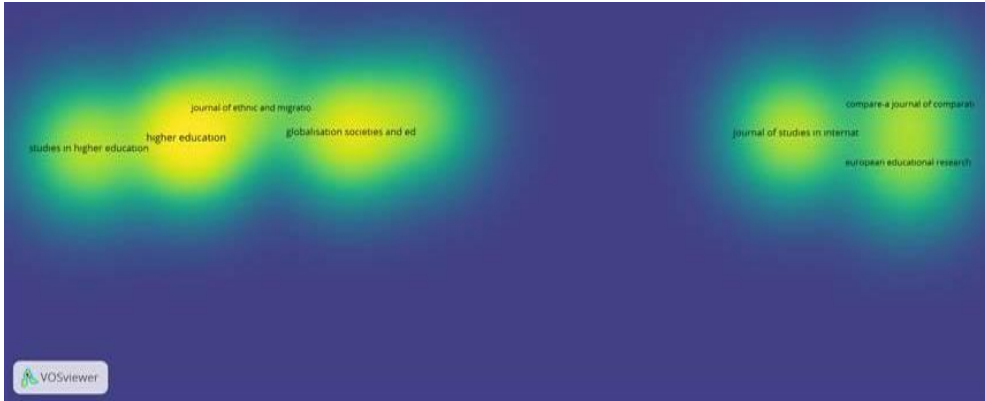
**Figure 7.** Citation network for articles

According to the citation network of published articles on the subject; Articles published in the UK were cited more than articles published in the USA, the Netherlands, Scotland, Singapore, and China. On the other hand, articles published in Turkey, Italy, and Australia often cited articles published in Germany. It is seen that there are two separate centers, England and Germany, in inter-article citations.



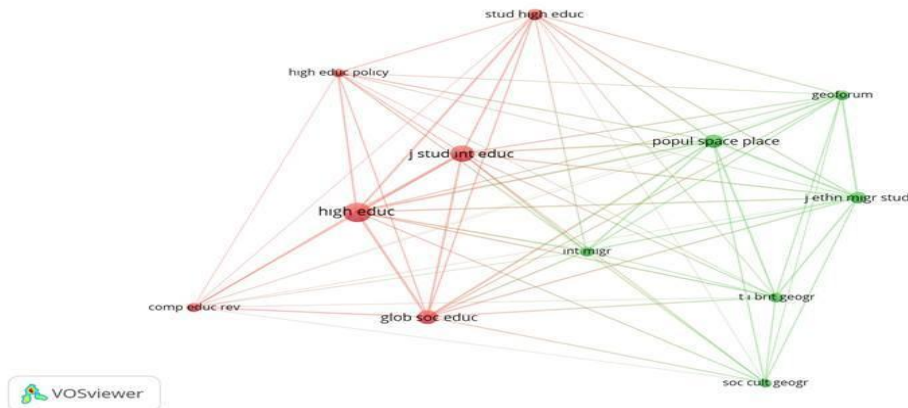
**Figure 8.** Citation network for inter-university articles

Dark yellow-green colors indicate intensity. The universities with the most cited publications on International Student Mobility are as follows: University of St Andrews (UK), Dundee University (Scotland), Groningen University (Netherlands), Bielefeld University (Germany), and Latvia University (Latvia). Articles published in universities originating in England and Scotland are more frequently cited.



**Figure 9.** Journals with the most articles on the subject

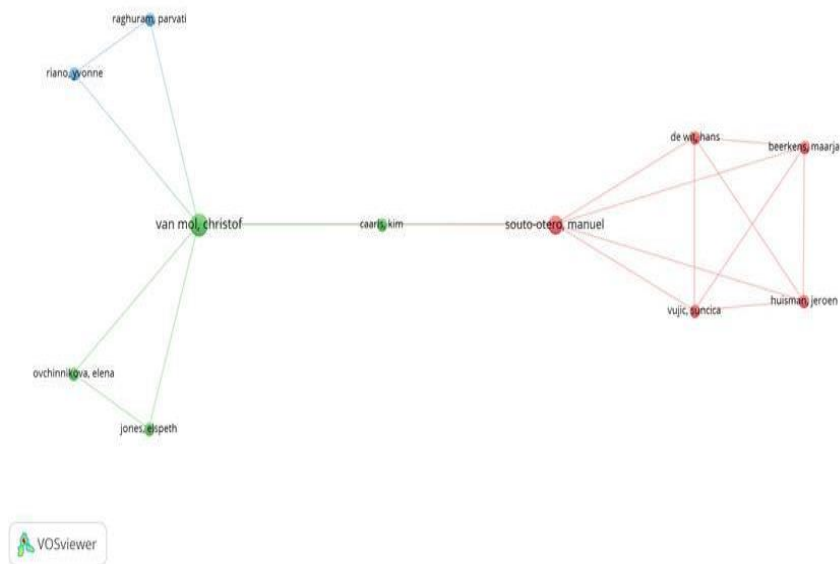
The journals in which the most articles on international student mobility were published are as follows: Higher Education (42 articles), Journal of International Students (28 articles), Globalisation Societies and Education (25 articles), Journal of Students in International Education (14 articles), Students in Higher Education (13 articles), Journal of Ethnic and Migration Studies (9 articles), European Educational Research (9 articles), Compare a Journal of Comparative and International Education (9 articles). It is seen that the journals that publish the most on the subject are educational journals.



**Figure 10.** Inter-journal citation network

According to the inter-journal citation network, Higher Education and Population Space Place are the most cited journals. Higher Education journals have been cited mostly by other education journals (Journal Study International Education, Comparative Education Review, Globalisation Societies and Education). Population Space and Place was mostly cited by

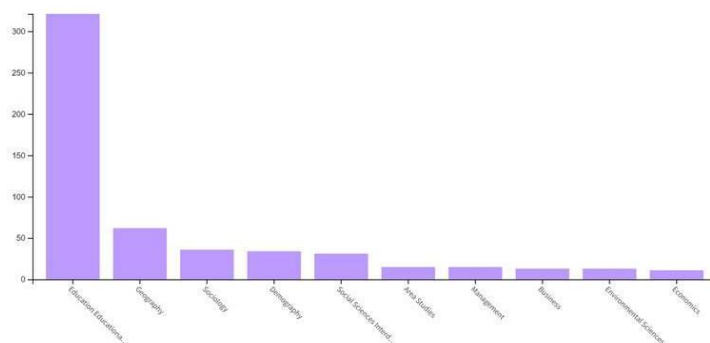
journals on migration and demography (International Migration, Social and Cultural Geography, Journal of Ethnic and Migration Studies)



**Figure 11.** Most cited authors

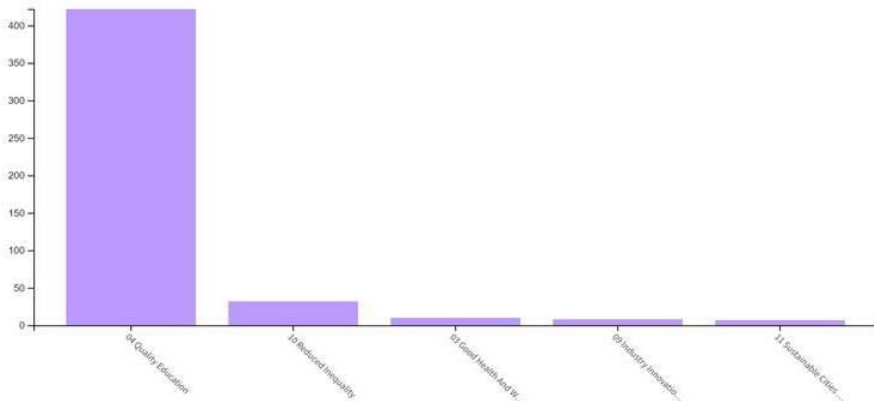
The most cited authors are shown in Figure 11. Van Mol Christof's "Should I Stay or Should I Go? An Analysis of the Determinants of Intra-European Student Mobility" is the most cited article. In this article, students on mobility to Europe are evaluated in terms of social and personal characteristics (Van Mol & Timmerman, 2014).

Soutu-Otero (2008) "The Socio-Economic Background of Erasmus Students: A Trend Towards Wider Inclusion?", the topic of his article is to determine the reasons for participating in the Erasmus program and the economic level of the students participating in this program (Soutu-Otero, 2008).



**Figure 12.** Distribution of articles according to scientific fields

Articles published on international student mobility are categorized in 9 different scientific fields. 300 of the published articles belong to the field of educational research. 62 articles belong to geography, 36 to sociology, 34 to demography, 31 to social sciences, 15 to management, 13 to environmental sciences, 15 to field research, 13 to business, and 11 to economics. It is seen that the articles were mostly published in the field of educational sciences.



**Figure 13.** Distribution of articles according to topics

The articles published on international student mobility are listed as follows in order by subject: 452 articles are related to "Quality Education", 40 to "Reduced Inequality", 15 to "Good Health and well-being", 15 to "Industrial Innovation", 8 to "Sustainable Cities and Communication". The topic of the articles is usually limited to quality in higher education.

## Conclusion

In this study, a total of 530 articles scanned in the Web Of Science database were examined and the results of the bibliometric analysis of the articles were evaluated in terms of the following criteria:

When the distribution of articles on international student mobility by years was analyzed, it was found that although international student mobility accelerated after 1980 (UNESCO, 2023), publications on the subject started to increase after 2000. This can be attributed to the fact that internationalization in higher education covers a longer period than global interaction. In terms of language of publication, it was determined that 530 articles were published in English. The reason why publications are usually in English is that there is more international student mobility to English-speaking or English-medium countries. The most cited articles focused on the reasons for international student mobility. In the less cited articles, the countries sending and receiving students abroad were compared. When analyzed in terms of Keywords, within 530 articles, the most used keywords are the



following: Higher education, educational mobility, international students, mobility, China, students support, Europe, space, transnationalism, migration, Erasmus, distinction, regional hubs, home. International student mobility is evaluated within the framework of student and educational mobility, most preferred countries, and the impact of globalization on higher education. Social inequality, social injustice, and access to education were evaluated to a more limited extent in the articles. When articles are analyzed by country, Most articles were published in the UK, USA, China, Germany, Germany, the Netherlands, Scotland, Italy and Turkey. It has been observed that there are also more publications on the subject in countries receiving international students. In the countries that send the most students, the number of publications on the subject is limited.

The universities with the highest number of citations for International Student Mobility, respectively, are as follows: University of St Andrews (UK), Dundee University (Scotland), Groningen University (Netherland), Bielefield University (Germany), Latvia University (Latvia). All of these universities are located in the Eurozone, the region most preferred by students. Although the USA, Canada, and Australia are among the countries preferred by foreign students, publications on the subject in universities in these countries have lagged behind the Eurozone. The journals that publish the most on the subject are as follows: Higher Education, Journal of International Students, Globalisation Societies and Education, Journal of Students in International Education, Students in Higher Education, Journal of Ethnic and Migration Studies, European Educational Research, Compare a Journal of Comparative and International Education. It was observed that publications on the subject were generally published in education journals, but more limitedly in journals on sociology, psychology, and migration. When analyzed according to citations to journals, Higher Education and Population Space Place are the most cited journals. The fact that the journal "Higher Education" received the highest number of citations shows that the issue is generally evaluated within the scope of higher education. The most cited authors on the subject were Van Mol Christof and Soutu-Otero. In their article, these authors examined the socio-economic level of foreign students, their characteristics, and their reasons for participating in mobility. The largest number of articles were published in the fields of educational research, geography, sociology, demography, social sciences, management, environmental sciences, field research, business and economics. Student mobility has been assessed mainly in the context of education and to a limited extent in sociology, economics, human geography, and other social sciences. According to the subject of the published articles, they are as follows: "Quality Education", "Reduced Inequality", "Good Health and Wellbeing", "Industry Innovation", and "Sustainable Cities and Communication". The highest number of articles were

published on the subject of "The Search for Quality in Education". A more limited number of articles have been published in terms of "Reduced Inequality".

As a result, it is seen in the literature that articles describing and explaining student mobility are generally published. Publications on the impact of international student mobility on the internationalization of higher education are quite limited. The articles did not cover accredited programs in higher education, accredited language courses, scholarship opportunities, and the functions of international offices. International student mobility is not limited to mobility in education but should be considered from different perspectives such as social inequality, social injustice, reducing inequality, and managing risk groups. It is not only about the prestige of the education systems of the receiving countries. It should also be considered as a critique of the education systems of countries that send students abroad. OECD's annual international education report should include data on internationalization in higher education in addition to student mobility. In addition to student mobility in research and graduate theses, internationalization activities in higher education should also be focused.

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