EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD): A SYSTEMATIC LITERATURE REVIEW ON CURRICULUM DEVELOPMENT STRATEGY DESIGN

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Abstract:

The purpose of writing this article is to know the basis of curriculum development and to create curriculum development design strategies. This article was written using the systematic literature review method. The study is carried out systematically using the results of relevant publications and aims to search comprehensively, conduct analysis, and find results so that they can be used in reviewing theories. The databases used in the reference search are Scopus and Google Scholar. The result of this literature review is that curriculum development is the most important part to pay attention to. The results of this research can be utilized by schools not at the university level so that they can be a reference in the development of the school curriculum. Curriculum development must be based on the philosophy or outlook of life of the Indonesian nation adapted to the needs and development of the times. The findings of this study state that curriculum development strategies include components of creating an analysis plan, substance development, policy and implementation, and evaluation and follow-up. The important point of this curriculum development design strategy is to create alignment between indicators in each component so that it will lead to the realization of educational goals that have been set in support Education for Sustainable Development (ESD).

Keywords: curriculum development strategy design; education for sustainable development; literature review

1. Introduction

Education is actually carried out as an effort to educate the nation's life so that it is expected to improve the quality and dignity of human life. Quality education is also one of the indicators of the development of a nation's civilization (Fatih et al., 2022). Success in improving the quality of human resources is in line with improving the quality of

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education (Thoriq & Hadeli, 2021). In the world of education, the curriculum is a very important component because it regulates all activities or activities related to the implementation of education (Yuliani, 2022). The curriculum itself is a description of the vision, mission, and educational goals of a nation that contains values to be further transformed to students.

Currently, the world of education is experiencing rapid development along with advances in the fields of science and technology which then encourage changes in the education system, including changes to the curriculum (Fajri, 2019). The curriculum is very fundamental in the implementation of education because it is at the forefront of the success of a country (Kusumawardani et al., 2022). In this regard, the curriculum can be used as an indicator to determine the extent of the quality of education from a country (Masykur, 2019). This confirms that education and curriculum are two things that cannot be separated (Addakhil, 2019).

In principle, curriculum development must be able to meet terminal competencies, namely every student gets the same opportunity to develop their knowledge and skills through learning activities and experiences at school. In addition, the curriculum developed must have relevance to the world of work, so that the competencies possessed by students are in accordance with the needs of future employment (Hamdi, 2017). With a curriculum that is oriented towards the world of work or the industrial world, it should be able to create human resources that can compete, be competitive, and productive (Mahmudah & Putra, 2021).

The world of Indonesian education has experienced several changes in the curriculum along with the times. Social dynamics that occur in the life of society, nation, and state are also catalysts that encourage changes in the direction and goals of the curriculum (Prastowo, 2018). This indicates that the curriculum is flexible and futuristic in responding to any changes that occur (Agustin & Puro, 2016). History records that the Indonesian education world has implemented various curriculum products, ranging from the 1947 curriculum to the 2013 curriculum (Baderiah, 2018). The latest curriculum in Indonesia has also changed due to the Covid-19 pandemic. Based on data submitted by the Ministry of Education and Culture and Technology, during the Covid-19 pandemic, the implementation of education in Indonesia did not run optimally which was marked by the occurrence of *learning loss*, especially in the fields of literacy and numeracy. This is also in line with data submitted by the Programme for International Student Assessment (PISA) that around 70% of students aged 15 years have minimum competence in applying basic mathematical concepts or comprehension of simple reading. This condition then became the basis for the development of a new curriculum which later became known as the Independent Curriculum (Kemendikbudristek, 2020).

The development carried out on the curriculum must be oriented to the results of the evaluation that has been carried out on existing reality in accordance with the needs and developments of the times (Mu'arif et al., 2021). However, if you look at the trend of PISA results of Indonesian students associated with the curriculum, that change in the trend of PISA results is in line with curriculum changes in Indonesia. Curriculum changes

so far have not been able to do much to improve the literacy and mathematics skills of Indonesian students. Even these curriculum changes have a negative impact on PISA results, where the trend of Indonesian students' PISA results in reading and mathematics aspects from 2000 to 2018 shows a downward trend even though there have been three curriculum changes during that period (Putrawangsa & Hasanah, 2022).

In other literature, it is also explained that obstacles in curriculum implementation are the low quality of human resources, the low welfare of educators (inappropriate remuneration), unacceptable or inappropriate working conditions, lack of knowledge about curriculum issues, lack of standardization in managing curriculum changes, and political interference (Khosa & Makuvire, 2021). This is also in line with the results of other studies that state that the implementation of the curriculum in Indonesia is not optimal due to frequent changes in regulations and repeated revisions to regulations, uneven training for teachers, teachers do not understand the essence of the curriculum, incomplete facilities and infrastructure, school literacy movements and internal supervision that are not optimal and lack of learning support from parents (Djaelani et al., 2019). Therefore, the results of the evaluation in the implementation of this curriculum will be the basis for making improvements and developing new curricula as part of improving the quality of education.

In principle, the essence of the implementation of education must be able to answer the challenges and problems that occur in society by producing morally stable human resources, competent in utilizing science and technology, intellectually superior and having a great willingness or commitment to play a role in the social life of the community (Amiruddin & Syafaruddin, 2017). Through the various conditions that have been conveyed, the process of curriculum change and development must be carried out because the curriculum is not a fixed or static concept, but dynamically develops in accordance with the needs and development of the times. Curriculum development must be based on the philosophy or outlook of life of the Indonesian nation adapted to the needs and development of the times. A conceptual framework is needed as a basis for developing the curriculum. This conceptual framework will be a guideline in developing the curriculum so that the resulting curriculum products must be updated in a positive and efficient direction so that the goals of national education can be realized.

Therefore, the literature review questions in this review are:
1) What is the basis for curriculum development? and
2) What kind of strategy design is needed in developing the curriculum?

2. Method

2.1 Research Design
The design used in writing this article is *a systematic literature review*. The reason for using this type is to conduct a study on the design of curriculum development strategies. The study was carried out systematically using the results of relevant publications. The purpose of systematic literature review is to seek to search comprehensively, conduct

analysis, and find results so that they can be used in reviewing theory. The approach used in writing this article is qualitative. This is done to explore the results of publications that have been carried out by previous researchers that are relevant to curriculum development. The method used can show reliability because the procedures used are in accordance with the rules of literature review research (Grant & Booth, 2009).

2.2 Article Sources and Selection

Data collection used in this study is to find relevant previous research results. Data retrieval is a methodical process of gathering various information (Mahmudah, 2021). The databases used are Scopus and Google Scholar. The results of publications used for analysis are the publication of articles in reputable international journals, accredited national journals, and international proceedings. The keywords used in the search were 'curriculum development', 'curriculum design', 'senior high school curriculum', and 'curriculum development strategy'. Article searches are limited to the most recent year, 2019 to 2023. The reason for the year-long search is so that publication results focus on current curriculum development strategies. It also aims to make the results of this systematic literature review a fundamental part for educational institutions to develop it. The articles used in the analysis of this literature review are the results of research that has been conducted in secondary and senior high schools. So, the focus is on junior high school and high school. The results of this research can be utilized by schools not at the college level. Articles searched using various keywords found a total of 120 articles, then reduced by theme so that there were 24 articles. Then it was reduced again according to the level of education and got 22 articles. The findings of the articles used in this study can be seen in Table 1.

Table 1: Article Findings for Literature Analysis

Author	Title	Method	Country	Publication
Albayrak & Akgün, 2022	A program development model for information technologies curriculum in secondary schools	Design-Based Research (DBR)	Turkey	Scopus
Suyatmini et al., 2019	The development of accounting learning management on curriculum 2013 based on lesson study at a vocational school in Surakarta city, Central Java, Indonesia	Research and Development (R&D)	Indonesian	Unaccredited National Journal
Lecorchick et al., 2019	Makerspace curriculum development and implementation toward cross-cultural integrative stem learning: a United States and China high school collaboration	Problem-Solving Method	United States	Conference Proceedings
Wang, 2020	An investigation of school-based curriculum development in Chinese state-run high schools:	A Mixed-Method Design	United Kingdom	Repository

Author	Title	Method	Country	Publication
	A multi-cases study on curriculum leadership and teacher participation			
Haryadi Mahmudah, 2021	COVID-19 emergency curriculum implementation	Qualitative Research	Indonesian	Accredited National Journal
Mróz et al., 2020	Sustainable development in secondary schools curricula: The Polish context	A Nomothetic Approach	Poland	International Journals
Purwanto & Wahyuni, 2020	Implementation of curriculum development management in the improving of the quality of education in senior high school Muhammadiyah 01 cottage modern paciran	Qualitative Research	Indonesian	Accredited National Journal
Heikkilä, 2020	Finnish teachers' participation in local curriculum development: A study of processes in five school contexts	Qualitative Research	Finland	Scopus
Tinus, 2019	The role of maju school principals in curriculum development to realize an excellent and independent school	Qualitative Research	Indonesian	Conference Proceedings
Jatuporn, 2022	Discursive practices of local curriculum development discourse: Perspective of teachers and school principals under the place-based education reform movement	Qualitative Research	Thailand	Scopus
Cahapay, 2020	Delphi technique in the development of emerging content in high school science curriculum	Delphi Technique	Philippines	Scopus
Hendriawan et al., 2019	High school history education and education for sustainable development: An integrated curriculum approach	Quantitative Research	Indonesian	Conference Proceedings
Chen, 2020	Design and development of a high school curriculum learning system based on the core quality of mathematics	Qualitative Research	China	Conference Proceedings
Room et al., 2022	Implementation of essential curriculum (emergency) at Muhammadiyah tanjong redeb high school	Qualitative Research	Indonesian	Caredited National Journal
Liao et al., 2023	A practical curriculum design and learning effectiveness evaluation of competence-oriented instruction strategy	A Quasi-Experimental Design	Taiwan	Scopus

Author	Title	Method	Country	Publication
	integration: A case study of Taiwan skills-based senior high school			
Kelly et al., 2019	Co-design for curriculum planning: A model for professional development for high school teachers	Design-Based Research (DBR)	Australia	Scopus
Hasbi Mahmudah, 2020	Development of entrepreneurship-based school curriculum at SMA Negeri 1 Temon	Qualitative Research	Indonesian	Caredited National Journal
Mwanza, 2019	Teacher's voices crying in the school wilderness: Involvement of secondary school teachers in curriculum development in Zambia	A Concurrent Embedded Design of the Mixed Methods Approach	Zambia	Scopus
Fantula et al., 2021	An evaluation content in curriculum 2021 at high school Stella Duce Dua Yogyakarta	Evaluative Research	Indonesian	Conference Proceedings
Thipatdee, 2020	The development of English competency-based curriculum integrated with the local community for high school students	Quantitative Research	Thailand	International Journals
Fredriksson et al., 2020	A comparative study of curricula for education for sustainable development (ESD) in Sweden and Japan	Qualitative Research	Sweden	Scopus
Ariana et al., 2019	Teacher awareness about multicultural in curriculum management and instructional development in senior high school	Quantitative Descriptive	Indonesian	Conference Proceedings

2.3 Data Analysis

Data analysis in writing this article with the help of Atlas.ti software version 23. The analysis procedure used to analyze the findings of publications that have been carried out by creating research codes. It aims to get in-depth novelty from various perspectives that have been done by researchers in the publication of research results found to be used as a basis for the analysis of this study. The codes that have been compiled are then made a concept map of literature review research.

3. Result and Discussion

3.1 Result

The analysis in this systematic literature review was assisted by Atlas.ti software version 23. The analysis is carried out by interpreting the findings of previous research by making data codes. Based on the results of data analysis, the findings of this study can be seen in Figure 1.
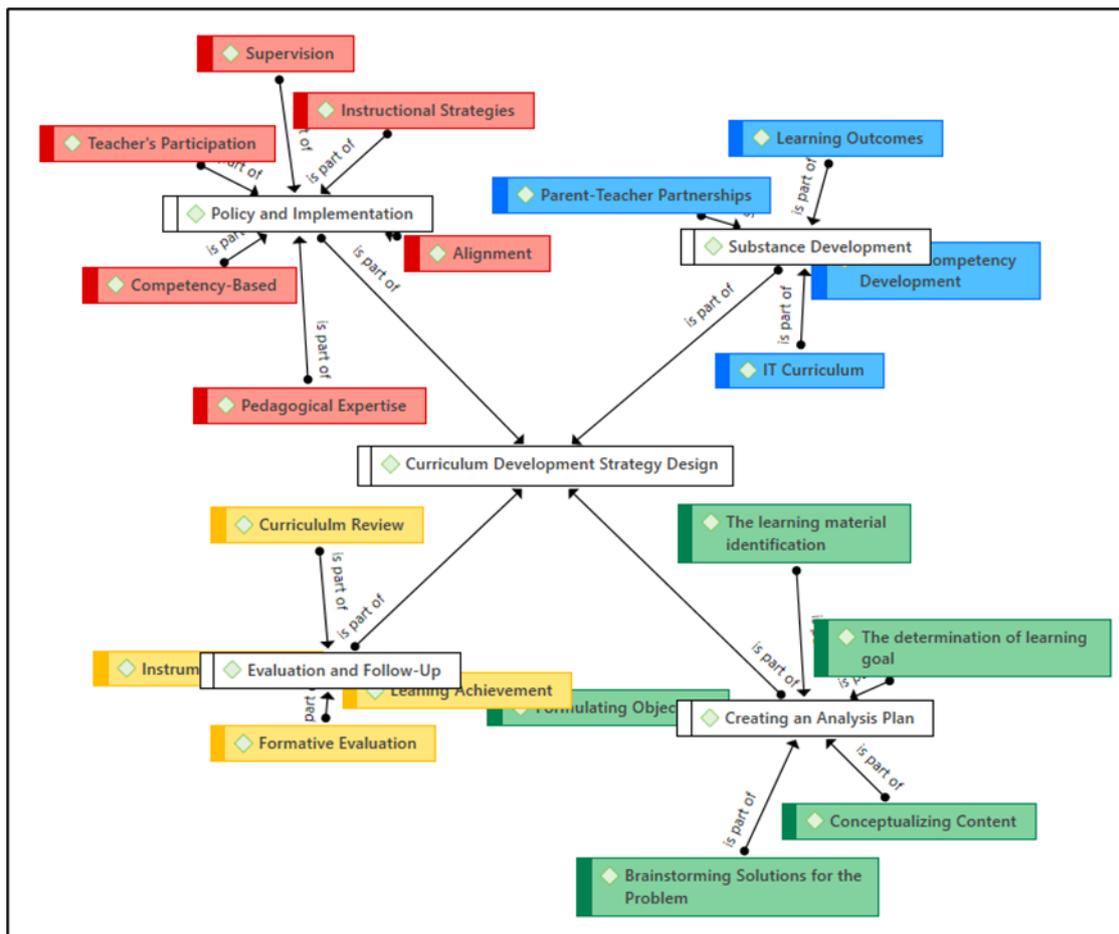

Figure 1: Novelty Design Curriculum Development Strategy

3.2 Discussion

3.2.1 Basic Curriculum Development

The basis of curriculum development is the most important part to pay attention to. This is a reference in school development. Based on Figure 1 above, the findings of this study have components of creating an analysis plan, substance development, policy and implementation, and evaluation and follow-up. The findings of this research are in line with theoretical studies which state that curriculum development is carried out through various stages including design, content selection, planning, implementation, teaching strategies and methods, evaluation and needs assessment carried out in certain periods in accordance with policies set by the educational institution concerned (Gunduz, 2021). This is also in line with other research which states that planning or needs analysis,

implementation, and evaluation are stages that are often used in curriculum development (Adesoji & Tinuke, 2019; Cheung, 2020; Yuliani, 2022).

Curriculum planning is the first step in building a curriculum when curriculum developers make decisions and take action to produce a plan that will be used by teachers and students. Curriculum implementation or commonly referred to as curriculum implementation seeks to transfer curriculum planning into operational actions. Curriculum evaluation is the final stage of curriculum development to determine the extent of learning outcomes, the level of achievement of the planned program and the results of the curriculum itself (Ayuningsih et al., 2020). This emphasizes that curriculum development will focus on the process of determining what knowledge, skills, and values students learn in school, what experiences should be provided to realize the desired learning outcomes, and how the teaching and learning process in schools or education systems can be planned, measured, and evaluated (Yohaningsih, 2021).

Each of the components found from the results of the analysis is discussed in detail as follows:

Creating an Analysis Plan has indicators the learning material identification, the determination of learning goal, brainstorming solutions for the problem, conceptualizing content, and formulating objectives. The indicators of the findings from the results of this analysis become supporting data for curriculum implementation. This is in accordance with research which states that the Analysis Plan stage in curriculum development begins with identifying how teaching materials are needed in the learning process to make it easier for students to understand the material taught so that it will help teachers in carrying out the process of teaching and learning activities in the classroom (Buyung, 2022; Purwanto & Risdianto, 2022). According to Suyatmini et al. (2019), in identifying teaching materials, many things must be considered, such as; (a) the potential of learners; (b) the existence of relevance to the characteristics of the school's area of origin; (c) the level of physical, intellectual, emotional, social, and spiritual development of learners; (d) benefits for students; (e) the structure of science; (f) the actuality, depth, and breadth of the learning material; (g) relevance to student needs and environmental demands; and (h) the allocation of time provided (Dewa & Widiastuti, 2021). With the existence of quality teaching materials, it can have an impact on increasing motivation, interest, creativity which leads to improved student learning outcomes (Puspita & Purwo, 2019).

In relation to curriculum development, the determination of learning goal is a stage of setting learning goals that contain aspects of knowledge, abilities, and attitudes to be developed (Masykur, 2019). According to Budiastuti et al. (2021), there are several components that are taken into consideration in formulating learning objectives such as: audience components, behavior, conditions, and degrees. Structured learning objectives allow a person to have a willingness to learn and improve skills (Brown & Green, 2018). In addition, the quality of learning can be improved by setting specific and measurable learning goals (Han, 2021). Thus, the output resulting from the realization of the curriculum program in the form of learning must describe the purpose of the initial objectives formulated in the curriculum.

In addition, the curriculum developed is not only a manifestation of every idea but must direct students to have critical thinking skills by being able to take actions that produce solutions to problems that develop in society (Sugiana, 2018; Wahid & Hamami, 2021). In practice, the curriculum developed will engage students in collaborative work and real-world problem solving to develop students' metacognitive and humanistic skills (Kelly et al., 2019). To make it happen, brainstorming is one of the most important strategies in generating creativity in solving problems. Using the concept of brainstorming solutions for the problem, curriculum developers will engage students in empathy-based and personalized learning experiences to develop skills according to the characteristics they need. The teacher will guide students to have skills in thinking, solving problems and acting with confidence (Fauziah & Mahmudah, 2020). This will help students identify problems and methodologically produce the best solution (Lecorchick et al., 2019).

In addition, curriculum development also focuses on content and aspects related to it (Yohaningsih, 2021). In general, curriculum conceptualization is very important because it includes substance that is seen as a learning plan for students or a set of goals to be achieved. One very common conceptualization of curriculum is to see it as content. Curriculum defined as content is another term emphasis known as syllabus. A syllabus is usually a summary statement of the content to be taught in a subject. The syllabus is clearly a subsection of the curriculum and thus incorporated in a broader concept (Mulenga, 2018).

In another theoretical study, it is also explained that the curriculum structure is a conceptualization of content in the form of subjects, the position of content or subjects in the curriculum, the distribution of content or subjects in semesters or years, the learning load in subjects and the learning load every week for each student (Daga, 2020). The selection of content or content should be based on the subject approach (knowledge) or process approach (skills). The content consists of facts and concepts related to educational purposes. Content in the curriculum must pay attention to criteria: significance, validity, relevance, social utility, learning ability, and student interest (Saufi & Hambali, 2019). The delivery of material or content in education must be maximized with comprehensive delivery in order to realize quality education (Rasyidi, 2019).

In developing the curriculum, curriculum objectives are one of the components that must be considered, because from these objectives the curriculum that has been prepared at an institution can be achieved as desired by an educational institution (Fatih et al., 2022). Formulating objectives are needed in curriculum development because it is a process of designing and formulating curriculum objectives that are expected to be mastered by school graduates after completing education. The goal must include three aspects, namely aspects of knowledge, attitude values, and skills (Purwadhi, 2019). The purpose of the curriculum is to provide assistance to teachers to make decisions about the order of material to be delivered to students. According to Oktapiani (2019), there are several factors that must be considered in formulating curriculum goals, including: (1) national education goals, because these goals are the foundation for every educational

institution; (2) conformity between the objectives of the curriculum and the objectives of the educational institution concerned; (3) the conformity of curriculum objectives to the needs of society or employment; (4) conformity of objectives with current developments in science and technology; and (5) conformity of curriculum objectives with the value system and aspirations prevailing in society.

Furthermore, according to Ayuningsih et al. (2020), there are two things that are an important part of determining goals in the curriculum, namely the formulation of curricular goals and instructional goals. The formulation of curricular goals should be based on institutional goals. Because curricular goals cumulatively are manifestations of institutional goals themselves. In curricular objectives are formulated objectives that include aspects of knowledge, skills, and attitudes as well as the values expected of students in each subject. While what is meant by the formulation of instructional goals here is general instructional goals. These are the educational goals that students expect for each subject. These instructional objectives are spelled out directly from the curricular objectives. Therefore, curricular objectives can have one or more instructional objectives. The achievement of these cumulative instructional goals will realize the achievement of curricular goals. Compared to curricular objectives these instructional objectives are more specific, operational, can describe the behavior of measurable student learning outcomes.

Substance Development, has indicators of parent-teacher partnerships, learning outcomes, IT curriculum, and teacher competency development. The indicator findings from this study are in line with research stating that productive parent-teacher partnerships are essential for positive student outcomes (Mann & Gilmore, 2021). Both teachers and parents want positive interpersonal relationships (Hannon & O'Donnell, 2022). Parental involvement in schools will help teachers increase children's confidence, increase discipline scores, and increase children's motivation to excel through individual participation and school committee consensus. The partnership between teachers and parents will create a relationship of mutual respect and communication becomes more massive so that they have a sense of responsibility to support children's learning development (Hafidin, 2019; Handayani & Hasrul, 2021; Shofiyah et al., 2020). The results of other studies also show that there is a significant positive relationship between parental involvement and increased student academic achievement, especially in terms of home teaching, parenting, decision-making and volunteerism (Ramanlingam & Maniam, 2020). This positive partnership formed between parents and teachers is an important capital in the success of curriculum implementation in education units.

Education for sustainable development (ESD) receives special attention in the implementation of education today. The concept of ESD not only affects educational content, but also the process and outcome (Gatti et al., 2019). In this regard, learning outcomes in curriculum development become a stimulus to create new knowledge allowing students to test and achieve their ideas in the way they want, which promotes their innovation competencies (Guo et al., 2020). Research Guo et al., (2020); Wei et al., (2021) stated that learning outcomes are related to cognitive, behavioral, and affective

outcomes. In developing the curriculum, learning outcomes become an important component because they are related to the internalization of students' competencies. The achievement of learning in this curriculum will be a parameter to see the success rate of a school in providing education.

The development of the times that occur today has signaled teachers to utilize information and communication technology (IT) in teaching and learning activities. In this regard, having IT knowledge has become one of the competencies needed to adapt to the 21st century (Albayrak & Akgün, 2022; Purwanto & Wahyuni, 2020). This confirms that the use of information and communication technology is a concrete step to advance the nation. In general, IT-based learning is considered an option, an alternative to traditional learning. The difference between traditional and IT-based learning can also be recognized in terms of the availability of primary sources of information, assessment, or quality of education. While in traditional education, students are evaluated only by teachers, who are also their main source of information, and the quality of education depends on the knowledge and skills of teachers, while in IT-based learning, evaluation can be done with the help of tools and systems, students can obtain information from various documents uploaded on the platform, and the quality of education is affected by the level of training teachers have in using technology, and also their teaching style (Coman et al., 2020). The proper use of information technology in learning is expected to improve student learning outcomes by emphasizing the effectiveness of the learning process carried out in order to increase the effectiveness of the implementation of the learning process (Kurniawan & Mahmudah, 2020).

The quality of student teaching and learning is determined by the quality of teachers that can be obtained through continuous learning (Wolde, 2021). The concept of continuous learning is increasingly attracting attention and poses new challenges in educational development, especially in improving teacher competence. According to (Weng et al., 2020) teacher competence is divided into 9 dimensions, namely (1) domain competency, (2) research competency, (3) curriculum competency, (4) lifelong learning competency, (5) social and cultural competency, (6) emotional competency, (7) communication competency, (8) information and communication technology competency , and (9) environmental competency. According to Xu & Yue (2019) there are several ways that teachers can do to develop their competencies, namely (1) teachers can gain knowledge and skills when participating in coaching or learning activities at school, (2) teachers can also improve their professional skills through classroom research and learning from colleagues or collaboration, and (3) teachers can learn when attending reflection meetings and learning evaluation. Thus, teacher competency development is a must and needs to be improved programmatically, continuously through various professional coaching systems, so as to improve the ability of these teachers. Qualified teachers will be an indicator of success in curriculum implementation.

Policy and Implementation, consisting of supervision indicators, teacher's participation, alignment, instructional strategies, pedagogical expertise, and competency-based. Indicators of this research findings can be discussed through various

theories such as those conveyed that in any country curriculum implementation will be regulated through policies formulated by stakeholders (Dorji, 2022). Success in curriculum implementation policies is influenced by several things such as those conveyed Chepkuto et al., (2018) that provision or supervision has a significant influence on curriculum implementation in schools.

According to Nahrowi (2020), educational supervision references include curriculum components, curriculum content, and curriculum development strategies. A successful vision assists in identifying a collective foundation of educational objectives, nature of knowledge, role of teachers, and curriculum objectives. Successful oversight makes curriculum policies and processes accessible and transparent to all stakeholders, including parents and community groups. In addition, the results of the study Jonyo & Jonyo (2019) show a strong agreement among curriculum implementers that the main objectives of curriculum supervision include monitoring performance, sharing information and solving problems. This states that the curriculum development process must be supervised or carried out by revision. Supervision must be carried out to control the extent to which educational organizations carry out their duties and functions (Karmila & Suchyadi, 2020).

The results of the study Mulenga & Mwanza (2019) show that the majority of teachers are willing to participate in the curriculum development process, especially in needs analysis, formulation of educational goals, preparing curriculum projects, and writing curriculum materials. Teacher engagement and knowledge are essential for students to develop the knowledge and skills required by students to succeed academically. According to Heikkilä (2020), teacher participation can occur at an early stage in a school curriculum group or through a role as a curriculum expert, or in the second stage by participating in discussions on different aspects of the curriculum. Teachers who are given time and opportunity to participate in curriculum development are characterized by a sense of belonging to contribute. Research conducted by Hirsh & Segolsson (2019) also shows how schools organize the development of teacher-based school curricula that allow collaborative learning to occur so that it involves all teachers in the school. Therefore, it is very important for teachers to be fully involved and participate in the entire curriculum development process because fundamental roles and responsibilities are placed on them during curriculum implementation.

In addition to the active participation of teachers in curriculum implementation, the changes and developments that occur require teachers to be able to understand and ensure that curriculum alignment occurs in the classes they teach. This needs to be done because lack of alignment causes education to become inefficient and lose its original purpose (Kim et al., 2022). The concept of alignment is outlined in the curriculum so that it makes it easier for schools to know the needs of the industry (Mahmudah & Santosa, 2021). Curriculum alignment can affect student learning outcomes. Curriculum alignment is the coherence between all components of an educational system, especially between (1) learning objectives, (2) assessment and (3) teaching. An understanding of curriculum alignment can support teachers in making improvements to their planning,

teaching and assessment (Johnson et al., 2020). Proper alignment can also improve the effectiveness of curriculum implementation (Shaltry, 2020).

Instructional strategies are needed in curriculum implementation as a reference in achieving educational goals (Nafi'i & Shaifudin, 2021; Sodikin, 2019). Instructional strategies developed in the curriculum need to consider the goals, conditions of learners, materials and future school objectives. This confirms that it is important to determine a curriculum that is in line with student needs in accordance with the times (Jatuporn, 2022). Success in curriculum development is also influenced by pedagogic competence, namely teacher knowledge of curriculum material, curriculum continuity (horizontal and vertical), and the importance of the curriculum itself. With the pedagogical abilities possessed by teachers, teachers are expected to guide and direct curriculum development in learning effectively, and supervise its implementation (Khan et al., 2022; Sulfemi & Supriyadi, 2019). The results show pedagogical has the potential to make a significant contribution to the quality of learning and teaching (Evans et al., 2021). In addition, curriculum changes will change pedagogical practice because the learning outcomes contained in the syllabus not only emphasize knowledge but also skills that require pedagogical practice to develop in the classroom. The core of teachers' professional knowledge is tied up in the teaching procedures they use and that knowledge is accessible and demonstrable through pedagogical reasoning that supports decision-making in learning to support 21st century learning (Kelly et al., 2019; Loughran, 2019).

Competency-based curriculum, as already mentioned focuses on practice, referring to the skills and ability to apply knowledge gained through various learning activities (Thipatdee, 2020). Thus, the essence of curriculum development policy is that the curriculum must be oriented towards the development of science and technology. The curriculum implemented must make students have competencies that are in accordance with the needs of future employment.

Evaluation and Follow-Up, from the results of the analysis consists of formative evaluation indicators, learning achievement, instrument validation, and curriculum vitae. This is in line with expert theory which says that according to (Elistanto et al., 2020) the implementation of the evaluation process must be supported by follow-up, because evaluation without follow-up will not have an impact on improving and quality of education. In addition, according to (Elmas et al., 2020), curriculum evaluation is the final stage of curriculum development as a comprehensive analysis of the excellence, application, effectiveness, and efficiency of the applied curriculum. Based on the results of research submitted by (Fantula et al., 2021) there are several important objectives in curriculum evaluation, namely: (1) knowing how far a student can achieve predetermined progress, (2) assessing curriculum effectiveness, (3) determining the cost, duration, and success rate of the curriculum. All these aspects boil down to the success of educational goals through curriculum implementation.

In principle, before the teacher conducts an evaluation or assessment, the teacher must first study the curriculum content. By recognizing the types of assessment results, teachers will choose to determine accurate evaluation techniques and instruments. The

right assessment will provide appropriate results and help see the results of student achievement development (Suyatmini et al., 2019). This implies that in conducting evaluations, guidelines are needed to evaluate the results of learning. In addition, teachers can also make documents in the form of reports on the results of evaluations that have been carried out so that students can find out the learning outcomes (curriculum vitae) (Gottlieb et al., 2021).

Formative evaluation models have in recent years become a reference in the context of learning assessment. According to Yuan & Zhang (2019), compared to traditional evaluation models, formative evaluation pays more attention to developmental evaluation from continuous observation, recording, and reflection of the entire learning process. Formative evaluation emphasizes that the student is the main part. It can stimulate student interest in learning, organize and control the learning process, and foster morale by tailoring teaching through feedback and evaluation. According to Aziz & Dwiyama (2022), formative evaluation will be used as a basis for curriculum improvement.
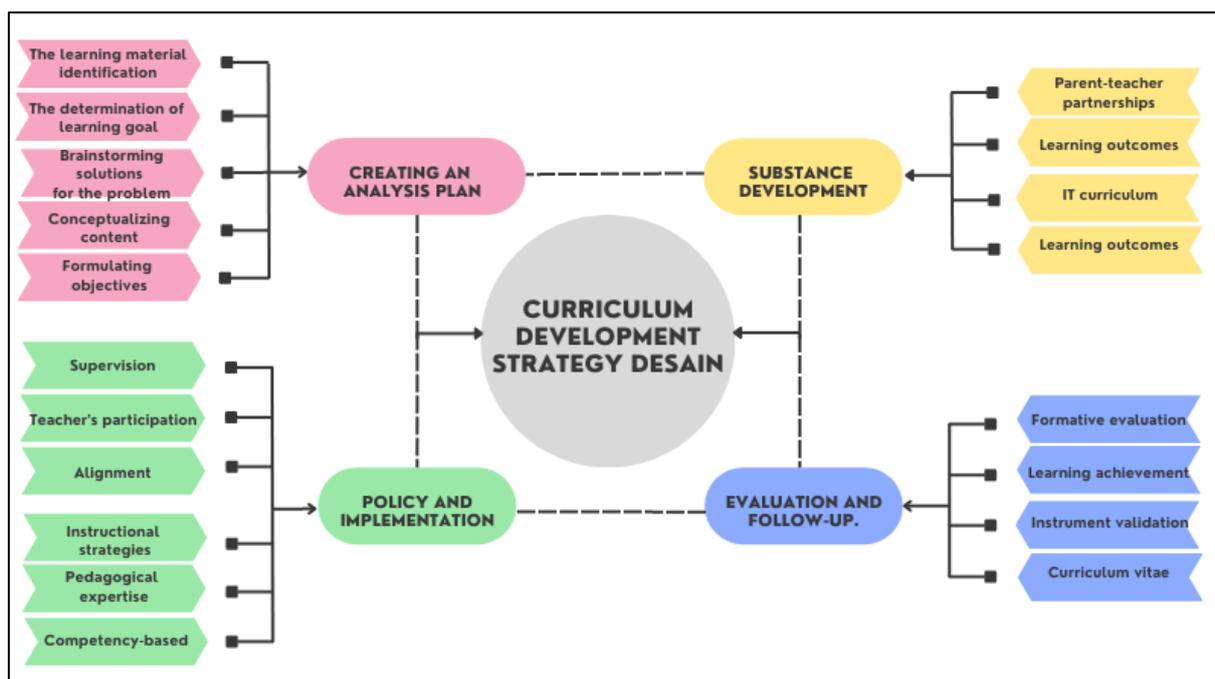

Figure 2: Curriculum Development Strategy Design

In principle, in curriculum development, evaluation activities become a benchmark to see the level of success in the implementation of teaching and learning activities. Evaluation activities are usually carried out at the end of learning activities. Thus, evaluation becomes a must because it will be the basis for seeing student learning outcomes. The results of this curriculum evaluation process will be used as a reference to make improvements to the curriculum that has been developed.

4. Conclusion

Based on the results of publications that are used as the basis for literature review analysis and the results of this analysis, it can be concluded that to realize the implementation of Education for Sustainable Development, a strategy is needed in developing school curricula. The findings of this study state that the basis of curriculum development includes components (a) creating an analysis plan consisting of indicators (1) the learning material identification, (2) the determination of learning goals, (3) brainstorming solutions for the problem, (4) conceptualizing content, and (5) formulating objectives, (b) substance development has indicators of (1) parent-teacher partnerships, (2) learning outcomes, (3) IT curriculum, and (4) teacher competency development, (c) policy and implementation have indicators (1) supervision, (2) teacher's participation, (3) alignment, (4) instructional strategies, (5) pedagogical expertise, and (6) competency-based, and (d) evaluation and follow-up consisting of indicators (1) formative evaluation, (2) learning achievement, (3) instrument validation, and (4) curriculum vitae.

An important point of curriculum development is the creation of alignment in each component that leads to success in realizing the educational goals that have been set. The curriculum developed is not only a manifestation of every idea but must direct and involve students in collaborative work to have competencies that are in line with the development of science and technology and in accordance with the needs of future employment so as to create education for sustainable development.

The success indicators of each component are not yet measurable. One thing is certain, when educational institutions are able to integrate these components in every educational activity, then that will be the basis for developing a curriculum based on educational principles for sustainable development.

Conflict of Interest Statement
The authors declare no conflicts of interest.

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