Research Article

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Exploring the Endogenous Development of Mathematics Curriculum in the African Context from the Perspective of Educational Borrowing Theory

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Abstract

Appropriate curriculum revision is an urgent issue for every African country to achieve. It is crucial to implement revisions by using the accumulated knowledge and experience in each country. This study firstly develops an analytical framework using educational borrowing theory for exploring the level and form of endogeneity in mathematics curriculum development. Secondly, using developed framework, characteristics of mathematics curriculum development in African countries are analysed based on the literature review from colonial period to recent years. As a result, the author found that African countries are steadily revising their mathematics curriculum, with regard to the domestic educational situation. However, in recent years, many African countries are pursuing curriculum revisions in accordance with the educational policies framed by international institutions because of the globalisation of education. In addition, the analytical framework proposed in this study can be used to analyse the endogeneity in curriculum development, and proceed with appropriate curriculum development.

Keywords: Educational borrowing, curriculum revision, endogenous development in education, post-colonialism, Africa

1. Introduction

According to the 'EFA Global Monitoring Report 2015', many countries have made impressive gains in access to education since the 2000 World Education Forum in Dakar, Senegal (UNESCO, 2015). However, the improvement in quality has not always kept pace. One of the reasons for this gap was that 'curriculum reform was not always successful'.

Since independence, many African countries have continued to implement curriculum reforms. However, Jacobsen (1996) has noted that there was a real danger in the attempts to reform mathematics education by copying overseas reform, since many developing nations did not have the resources to develop their own educational curricula amidst their own problems and priorities. In recent years, the impact of large-scale international assessment tests, such as Trends in International Mathematics and Science Study (TIMSS) and Programme for International Student Assessment (PISA), on the revision of national curricula has also been noted (Cai & Howson, 2013) These are issues closely related to educational borrowing (Phillips & Ochs, 2003). In addition, the key perspective for solving this problem is endogenous development theory, a term that emphasizes the direct participation of local people in all aspects of regional development, including culture and economy (Tsurumi, 1999).

There is no doubt that proper curriculum revision is one of the factors that lead to an improvement in the quality of education, and it is an urgent task that

every African country must realise. This study firstly reviews educational borrowing theory and endogenous development theory. Then, an analytical framework is developed. Finally, the author explores the characteristics of changes in mathematics curriculum development and revision of African countries.

2. Objective of the study

This study explores the transition of mathematics curriculum development and revision in African countries from the perspective of endogenous development, using educational borrowing theory.

3. Methodology

The study is conducted in the following steps.

(1) To develop an analytical framework for this study by reviewing previous studies on educational borrowing theory and endogenous development theory.
(2) To organise the characteristics of mathematics curriculum development in African countries, based on previous research, into the 'Colonial period and the immediate post-independence period', 'post-independence', and 'recent years. The main source of data is previous literatures on mathematics curriculum development in African countries.
(3) To discuss the results obtained in (2) according to the analytical framework, and to identify the characteristics of curriculum development in each period.

4. Literature review

This chapter identifies the problems of curriculum borrowing in mathematics education and also summarizes existing research on educational borrowing theory and endogenous development theory, both of which are key to develop analytical framework for this study.

4.1 The problem of curriculum borrowing in mathematics education

Beginning with the Sputnik crisis of 1957, there was a flurry of curriculum development in mathematics education around the world from the 1960s to the 1970s. However, too much emphasis on scientific logic and rigid led to an estrangement from the realities of education. As a result, these developments were generally dismissed as failures (Walmsley, 2003). At the time, African countries which were under Western colonial rule used curricula that were based on this modernisation of mathematics education, and this influence remains strong even today.

Mathematics for All (MfA) was established at the Fifth International Congress on Mathematical Education (ICME 5) in 1984, and discussions began on mathematics curriculum in developing countries (e.g., Damerow et al, 1984; Gerdes, 1986; and Nebres, 1988). MfA offered a perspective that encouraged authorities to reconsider mathematics education from social and cultural dimensions, including understanding the situations in developing countries, and the complexities regarding ethnic minorities and gender (Damerow et al., 1984). Gerdes (1986) was highly critical of this situation, asserting that there was a dire trend in mathematics education in developing countries caused by the hasty transplantation of curricula from developed to developing countries. Furthermore, Nebres (1988) noted that since many developing countries had borrowed curricula designed to educate elites in developed countries, the resulting education failed to adequately reflect the needs and sociocultural circumstances of the countries themselves.

Even though these discussions occurred more than 30 years ago, there have been similar calls in 2000s. Gates and Vistro-Yu (2003) stated that simply copying a curriculum built for a specific culture will not work in a different culture. The sociocultural aspects of mathematics curriculum are constantly debated. Because the peculiarities that are instilled in an individual by their race or culture, and which, at first glance, seem inconsistent with the universality of academic mathematics must be dealt within mathematics education. In other words, the universality of mathematics as a language cannot be ignored; however, dealing with only this in school education does not achieve much success.

Thus, the issue of curriculum borrowing in mathematics education has been a constant source of controversy. In order to tackle this issue, it is necessary to examine the historical transition of curriculum borrowing in mathematics education focusing on the extent to which it has taken place.

4.2 Educational borrowing

'Educational borrowing' or 'educational transfer' is a process by which a country incorporates the contents of the curricula of other countries into their curriculum by 'borrowing', 'copying', 'following', 'importing', or 'occupying' (Phillips 2009; Steiner-Khamsi, 2016).

(1) Four stages of educational borrowing

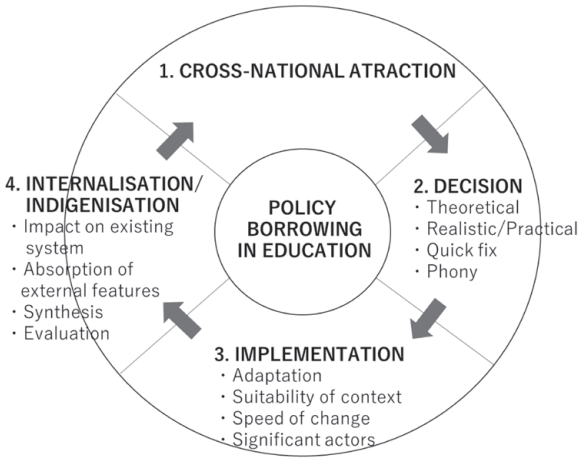

Figure 1. Four stages of educational borrowing. Source: Phillips & Ochs (2003).

Phillips and Ochs (2003) hypothesised that there are four steps in the process of gaining interest in the educational elements of other countries and adopting them (Figure 1). The first stage, 'Cross-national attraction', is the stage in which educational policies and methodologies are sought from outside the home country due to internal dissatisfaction, institutional disruption of education, negative external evaluations, and policy shifts.

The second stage, 'Decision', is deciding how to borrow the educational elements of other countries. Phillips and Ochs sub-divided this stage into four parts. The first is 'theoretical decision', which refers to the action of determining the necessary elements and borrowing them even if the policy of the borrowing country is different from the objectives of the lending country. The second is a 'phony decision'. This occurs, for example, when a minister of education decides to borrow the excellent elements of education from other countries to gain supporters. The third is 'realistic/practical decision,' which refers to the decision to borrow a whole educational element from a country. The fourth is a 'quick fix decision', which is very dangerous because it is not based on the results of research that has scientifically considered the validity of borrowing educational elements.

The third stage is 'Implementation', which refers to the process of adapting the borrowed educational elements to the home country system. The fourth stage is 'Internalisation', in which the transferred educational policy is institutionalised.

When developing or revising curricula, any countries refer to global trends or other countries' curricula to certain extent. Ono (2018) indicated that Phillips and Ochs (2003) relied on historical cases that had already completed the four stages of transfer to construct their theory. She further noted that the analysed cases were limited to European contexts. In other words, educationally advanced countries such as the United States and European nations conducted educational transfer through these four steps without missing a step; therefore, it can be said that this is an ideal model for educational borrowing.

(2) Spectrum of educational transfer

Phillips and Ochs (2003) suggested that educational transfer is categorised on a continuum from compulsory to voluntary, depending on the borrowing country's initiative (Figure 2). The range of transfer is continuous. Therefore, the categories 1 to 5 show the standard. Category 1 is 'imposed', which indicates an educational transfer that is a result of totalitarianism or authoritarianism. According to their explanation, after World War II, victorious countries sought the introduction of new measures to Japan and Germany, which will fall under Category '2' (required under

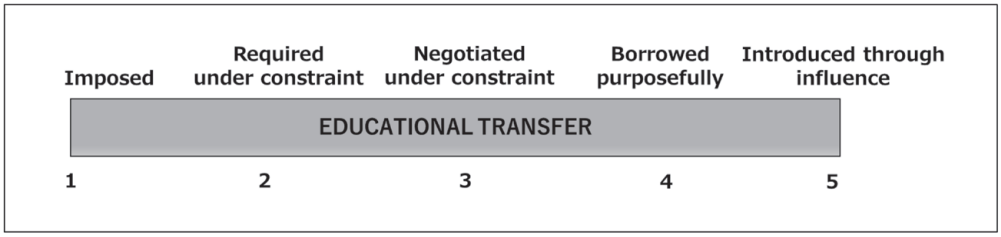

Figure 2. Spectrum of educational transfer. Source: Phillips & Ochs (2004).

certain constraint). In Category '3', policies and practices must be changed in return for various types of aid. Cases of intentional and voluntary borrowing would be categorised as Category '4' (Ono, 2018). Finally, Category '5' at the right end of the spectrum refers to a situation that enables an automatic adaption to local conditions.

4.3 Endogenous development

The term 'endogenous development' was proposed together with the concept of 'another development' in the 1975 UN Special Economic Assembly (Dag Hammarskjöld Foundation, 1975). Further, 'endogenous' was used alongside 'self-rehabilitation'. The endogenous development theory has been developed in various fields such as sociology, folklore, finance, and regional economics since it was introduced in the mid-1970s (Wakahara, 2007). Endogenous development theory replaced the economics paradigm that dominates our world today, and proposed a new paradigm of peace, environmental awareness, culture, and fundamental rights – all of which are important in enhancing the quality of people's lives. Ki-Zerbo (1992) indicated that post-independence Africa was still within the 'bed of others' and argued that it should be freed from them. 'Bed of others' directly illustrates the problem of curriculum transplantation in mathematics education, which is the status of category 1 and 2 in spectrum of educational transfer. Baba (2011) asserts the importance of encouraging specialist organisations that embody the key issues of the given country to embrace the process of awareness of the issues, rather than presenting them with answers.

From the above cases, endogenous development in education means that people in a region or country develop their own education based on their own knowledge and experience, or a process of incorporating knowledge and technology autonomously from other countries' aid agencies and international organisations, and internalising them in their own countries according to their situation.

4.4 Educational borrowing captured from the endogenous development perspective

Through a discussion of how endogenous development in education can be interpreted in educational borrowing theory, the author discusses the possibility of integrating endogenous development and educational borrowing theory and its forms.

The endogeneity of mathematics curriculum development in African countries based on the educational borrowing theory is first examined through the four stages of educational borrowing from the perspective of endogenous development in education. The first stage, 'cross-national attraction', and the second stage, 'decision', are considered to be the most important stages in promoting an endogenous development of education.

A country that borrows a curriculum discusses the content in accordance with the domestic educational situation, and decides on the content to be borrowed through discussions with aid donors. Through this process, the autonomous borrowing of knowledge and skills from aid donors occurs. Previous research has noted that aid donors play a decisive role in shaping the policies in the educational field (Samoff, 2005), and that lenders have a stronger initiative than borrowers. As a result, in the 'decision' stage, the risk of making a 'phony decision' or 'quick fix decision' may increase. Furthermore, if the initiative proceeds to the subsequent stages of 'Implementation' and 'Internalisation', it is likely to be difficult to internalise the contents because they are not in line with the requirements of the concerned country or region. In other words, in the four stages of educational borrowing, the key to promoting endogenous development of education is the first stage, 'Cross-national attraction', and the second stage, 'Decision'. They promote discussions with donors and lead to appropriate decisions in the second stage, 'Decision'. As a result, endogenies in developing curricula are promoted. Therefore, it is important to have professionals who are aware of the issues and accumulated domestic data to promote the endogenous development of education especially in those two stages. In the third and fourth stage, it is crucial for a country to internalise what they have borrowed based their country's own educational data as evidence. Consequently, it leads to endogenous mathematics curriculum development.

Second, curriculum development is explored in relation to the spectrum of educational transfer, which indicates the degree of initiative regarding educational borrowing. This spectrum is an index that measures the degree of initiative of a country in each stage of educational borrowing, especially, in the first stage,

'Cross-national attraction', and the second stage, 'Decision'. In other words, this spectrum can be regarded as a benchmark for measuring the degree of endogeneity for developing a curriculum.

In conclusion, it is possible to discuss endogenous development of curriculum development in the first stage 'Cross-national attraction' and the second stage 'Decision', by using the spectrum of educational transfer to measure the degree of initiative of a borrowing country. On the other hand, the third stage 'Implementation' and the fourth stage 'Internalisation' take place after the curriculum revision. These stages can be considered to be preparatory steps for the next curriculum revision. Therefore, it is necessary to conduct regular monitoring to accumulate data on curriculum implementation status and internalisation issues.

5. Framework for analysis

Analytical framework for this study is presented in Table 1. In the first and second stages of educational borrowing, a basis for the analysis is materials used in the curriculum revision and content of the discussions in curriculum revision. The extent of their endogeneity is discussed on the basis of the spectrum of educational transfer. This is because the endogenous curriculum development begins with the independent incorporation of borrowed knowledge based on the knowledge and experience of one's own, rather than compulsion. The used material and discussions in curriculum development and revision will provide direct evidence for them.

The third and fourth stages are the processes of adaptation of the implemented curriculum to suit their own country. Monitoring of the implemented curriculum and other materials, as well as the results of graduation examinations and periodic assessments, provide evidence for judging the proper implementation and internalisation of the curriculum and allow for an analysis of the degree of endogenous development of education.

6. Results and discussion

Firstly, the author organises the characteristics of mathematics curriculum development of African countries into three period, (1) colonial period and the immediate post-independence period, (2) post-independence, and (3) recent years. Secondly, characteristics of curriculum development in each period are discussed according to the analytical framework.

6.1 The transition of curriculum development in African countries

(1) Curricula in the Colonial Period and the Immediate Post-Independence Period

From the 1950s to the 1970s, many African countries gained independence from their former colonial rulers. Educational reform in Africa began with the establishment of mission schools, which were built across the continent from the 19th century onwards. The mission schools were run by European missionaries without government interference, primarily for the purpose of religious conversion. Until the end of the 19th century, most African people followed traditional religions and Islam (Basu, 1989).

Table 1. Analytical framework was developed based on the educational borrowing theory

Stages of educational borrowing	Perspective of analysis	Evidence
1. Cross-national attraction	The <<Spectrum of education transfer>> is used: 1. Imposed, 2. Required under constraints, 3. Negotiated under limitations, 4. Borrowed purposely, 5. Introduced under influence	・Materials used in the curriculum revision ・Discussion in the curriculum revision
2. Decision		
3. Implementation	The implemented curriculum is monitored and data on the curriculum implementation status and issues are accumulated. They are the basis for implementing endogenous development in the next curriculum revision.	・Materials related to monitoring of the curriculum implementation ・Accumulated data
4.Internalization		

Source: Developed by author

However, from the 20th century onwards, Christianity spread rapidly, supplanting traditional African religions. This is considered one of the most significant cultural transformations in the modern history of the African continent (Sundkler & Steed, 2000). Mission schools subsequently became 'government schools' as a result of the colonial policies of the European powers. These government schools further promoted children's assimilation of European culture. Uchendu (1979) states that the purpose of all colonial education was the 'subordination of Africans,' noting that curricula from the colonial homelands were adapted for use in the colonies to perpetuate colonial rule. Furthermore, Awasum (2014) points out that children were strategically distanced from respect for the values of local society and prevented, as much as possible, from noticing the changes in their environments.

With regard to the mathematics curriculum, selection of students was an important purpose in addition to the situation described above. It has been noted that although students learned mathematics, since their mathematics curricula included advanced content that even the teachers could not understand, mathematics education played an instrumental role in sustaining social inequalities through the exam-based selection system. Datta (1984) offered the following explanation of education and curricula in Africa during the colonial period:

> Colonial education is characterised by a marked bias towards Europe. This is manifested in curricula and in the languages of instruction. Children were taught in the languages of their colonial masters, and teachers in the French colonies were not permitted to use African languages. Similarly, the curricula were highly Eurocentric. African children in the French colonies learned about the great achievements of 'our ancestors, the Gauls'. African children in the British colonies battled to memorise obscure British plants and the names of Henry VIII's wives.

Curriculum development during the colonial period and immediately after independence consisted of either employing the curricula used in the colonial homelands without change, or cleverly revising them so as to perpetuate colonial rule. In this process, there was no consideration of the sociocultural aspects of the African countries where these curricula were employed. With regard to mathematics curricula, advanced content was deliberately included to segregate individuals, and thus keep society unequal.

(2) Curricula in post-independence period

Since the 1960s, many African countries, having gained independence from their colonial rulers, began to decolonise their education systems. Decolonisation in education began with the revision of public education curricula (Lebeloane, 2017). The impetus for developing and revising curricula in the international context came from a conference on education held jointly by the UNESCO and the United Nations Economic Commission of Africa in Addis Ababa in 1961 (Yamada, 2004), which noted that the present content of education in Africa is not in line with either existing African conditions or the postulate of political independence but is based on a non-African background. The conference recommended that African educational authorities should reform their curricula, textbooks, and teaching methods. At this conference, African leaders grasped the importance of expanding education and research programs that focused on countries' unique traditions, attitudes, and lifestyles in order to deepen the understanding of African cultural values.

After independence, many African intellectuals were critical of the goals and practices of education in Africa. They considered that the most effective solution for modern education would be to integrate traditional educational values and strengths with the knowledge required to live in a modern world (Woolman, 2001). This criticism focused on the problems of colonial and post-colonial education, the re-investigation of education in traditional Africa, and the pursuit of alternative forms of education that would liberate and develop real African national identities.

However, African countries faced various issues when revising curricula, and the revision effort failed to progress in an ideal direction. One key reason for this was the power relationships with development donors. As mentioned previously, when defining the research problem as issues in curriculum development in African countries, aid donors played a dominant

and decisive role in shaping policy goals, including in the field of education (Samoff, 2005), and many sub-Saharan African countries implemented curriculum reforms as a way of discharging accountability to educational development aid donors (Chisholm & Leyendecker, 2008). Even today, some countries cannot raise adequate budgets for education or revise curricula regularly and systematically because of their dependence on donor budgets. A typical example of this is the remaining influence of the New Math movement to modernise school mathematics. Shortly after the Sputnik crisis, high skilled mathematics contents were introduced from early stage of school curriculum. In particular, 'set theory' is introduced from the beginning of primary education in a form that is disconnected from children's activities.

(3) Curriculum in recent years

A significant trend in the curriculum revision in recent years is the influence of frameworks such as '21st century skills' and 'key competencies', on the educational policies of countries around the world, which are led by OECD members and other economically advanced countries. As mentioned earlier, Cai and Howson (2013) state that the trend towards global unification of mathematics curricula has resulted in great losses, and this loss is not only restricted to developed countries. The years and names of recent curriculum revisions in the sub-Saharan African countries are shown in Table 2. While the actual curriculum content must be analysed in detail, these new curricula are, at least in name, 'competency-based'.

The categories of qualities and abilities such as competencies to be developed resemble X-ray images that provide only a skeleton characterisation of the specific economic actors and citizens sought by governments. Differences regarding the society and

Table 2. Recent curriculum reforms in Sub-Saharan African countries

Country	Year	Main Reforms
Democratic Republic of the Congo	2002	Whole-person development
Mozambique	2003	Competency-based approach
Burundi	2004	Objectives-driven pedagogy
Angola	2005	Outcome-based approach
Senegal	2005	Competency-based approach
Tanzania	2005	Competency-based curriculum
Uganda	2006	Thematic curriculum
Zimbabwe	2006	Two-pathway education
Mauritania	2007	Competency-based approach
Mauritius	2007	Competency-based approach
Madagascar	2008	Competency-based approach
Ethiopia	2009	Competency-based approach
Lesotho	2009	Curriculum and assessment policy
Swaziland	2010	Competency-based approach
Mali	2011	Competency-based approach
Nigeria	2011	Trade subjects
South Africa	2011	Outcome-based education
South Sudan	2018	Competency-based approach
Rwanda	2012	Competence-based, entrepreneurship education
Cameroon	2013	Competency-based approach
Gabon	2013	Competency-based approach
Zambia	2013	Outcome-based curriculum
Benin	2014	Competency-based approach
Ghana	2014	Life skills
Namibia	2015	Revised curriculum for basic education
Kenya	2016	Competency-based approach
Malawi	2017	New secondary school curriculum

Source: Modified from Fleisch et al. (2019, p8)

citizens are eliminated, and shown as 'greatest common divisor' by using neutral language (Ishii, 2017). Thus, it can be argued that rather than directly applying international discussions and established benchmarks, it is important for local people to internalise them in a way suited to the countries and regions in which they live. However, the new aid paradigm in actual educational cooperation has been criticised as restrictive, in that the recipient governments have adopted policies conforming to donor preferences as donors aim to 'maximise ownership in the context of conditionality' (Fraser and Whitfield, 2009:93).

Thus, it is apparent that throughout all periods from the colonial era to the present, African countries have been unable to develop mathematics curricula in a way that takes account of domestic sociocultural aspects, mainly due to the absence of specialists in mathematics education who can engage in the process of curriculum development and revision with these aspects in mind. It is important for the people of each region or country to develop a country's mathematics education on the basis of their own knowledge and experience, or to independently adopt knowledge and skills from aid organisations in other countries or international organisations, and internalise them by adapting them to the domestic sociocultural context. However, there are few mathematics education specialists who can do this, making it difficult to revise curricula in a way befitting the sociocultural circumstances of the country or region.

6.2 Discussion

Table 3 summarises the discussions according to the historical timeline, taking into account the four stages of educational borrowing and the spectrum of educational transfer. Initially, the Bible was used for the purpose of spreading Christianity in mission schools in the colonies. In the colonial period and immediately after independence, the curricula of the former colonial powers were used without any modifications for the different environments in which they were taught. Therefore, it can be said that even the first stage of educational borrowing had not started yet. In terms of the spectrum of educational transfer, the curriculum of another country was imposed without any modifications, which corresponds to the first category (Imposed). Here, the social relevance, that is, the idea that the teaching content should be related to societal issues, was rarely taken into account. It is presumed that the political control of the former colonial powers was strong, so their political relevance played a significant role.

Since the 1990s, many Sub-Saharan African countries have implemented curriculum revisions. However, it has been identified that due to the lack of experts who can accurately capture and discuss the educational situation and insufficient accumulation of domestic data on education, the revised curricula copied curricula from developed countries. Furthermore, it is assumed that there were situations where aid donors had an overwhelming role, and recipient countries had to comply. With regard to the four stages of the educational borrowing model, it can be seen that the countries were in the 'phony decision' or 'quick fix decision' phase of the second stage, 'Decision'. In terms of the spectrum of educational transfer, they fall into second or third categories, 'required under constraints' or 'negotiated under constraints'. Nevertheless, the curriculum was revised despite various restrictions. Therefore, it can be said that the country started focusing on a certain degree of professional relevance, which considers the knowledge and attitudes expected of society in the future, in addition to social relevance.

With a quantitative expansion of education in 2000s, some African countries began implementing curriculum revisions by relating their own accumulated data to global trend. This corresponds to the third stage of the educational borrowing model, 'Implementation'. Further, the countries tried to promote 'Internalisation', the fourth stage. On the other hand, large-scale international academic assessments such as TIMSS, PISA, and SAQMEQ (The Southern and Eastern Africa Consortium for Monitoring Educational Quality) have had a strong impact on curriculum revisions in both developing and developed countries. Since these academic surveys are developed based on an ideal image of human beings and the ideal academic level that students should acquire, they are prompting nations across the world to achieve the same objectives. Furthermore, discussions on new academic aspects, such as a competency-based curriculum, are being conducted mainly by developed countries with more economic power. There are cases where African

countries are revising their curriculum in line with such global trends. They then proceed to the fourth stage, 'Internalisation', whereby the transferred educational policy is institutionalised in the country. However, the issue here is that it is difficult for a country to internalise the borrowed curriculum to suit their domestic environment. If the borrowed curriculum is not adapted and internalised in accordance with the educational situation in a country, the curriculum will not function effectively, and the quality of education will not improve. For effective internalisation, subject matter experts should be fostered, and domestic educational data need to be accumulated. Furthermore, for the system to function in a well-balanced manner, it will be necessary to have bureaucratic control in which education is governed not only by administrative power, but also through professional control, in which educational researchers and teachers are entrusted with decision-making, and residential control in cooperation with local communities and the market. Those controls must function from the 'Cross-national attraction' stage (first stage), and not from the 'Internalisation' stage (fourth stage).

Table 3. Characteristics of curriculum development in African countries

	Characteristics of curricula	Educational borrowing theory	
		Four stages of educational borrowing	Spectrum of educational transfer
Colonial era and after independence	Since the African countries used the curricula of the former colonial powers, they were influenced by the New Mathematics movement in the 1950s.	Since there was no discussion about educational borrowing, it did not fit into the four stages of educational borrowing.	Category '1. Imposed' because the curricula of the former colonial powers were imposed as they were and there was no space for debate.
1990s 〜 2000s	・There was a real danger in attempting to reform mathematics education by copying overseas reform since many developing nations did not have the resources to develop their own educational curricula considering their own problems and priorities (Jacobsen, 1996). ・Aid donors played an overwhelming and decisive role in educational policymaking (Samoff, 2005) ・Many sub-Saharan African countries continuously implemented curriculum reforms in order to fulfil their accountability to the donors (Chisholm & Leyendecker, 2008)	・ This corresponded to the second stage (Decision), particularly 'Phony Decision', 'Realistic /Practical Decision', or 'Quick Fix Decision' . ・Proceeding from the third stage (Implementation), it was difficult to conduct the fourth stage (Internalization) because it was not suitable for the country.	This corresponded to '2. Required under constraints' or '3. Negotiated under constraints' due to the lack of resources or power balance with aid donors although discussions on educational borrowing happened .
Recent years	・Mathematics curriculum is in danger of being circumscribed because of TIMSS and PISA (Cai & Howson, 2013). ・Competency-based curriculum reforms are underway around the world, but the content is similar in all countries. ・African countries are creating their own textbooks to meet their own needs (Fredriksen & Brar, 2015). ・Curriculum has been revised, but classroom lessons have not changed (Kusaka, 2020).	・Situation is different from previous era due to the international large-scale assessment and globalization. ・It still corresponds to the second stage (Decision), particularly 'Phony Decision', 'Realistic / Practical Decision' or 'Quick Fix decision'. ・Decisions considering the needs of their countries are also being made. ・There are some countries that have moved to the fourth stage (Internalization) by accumulating their own experience and knowledge.	Although this may be in line with a global trend, it still corresponds to '4. Borrowed purposefully' that captures the problems of the concerned country and refers to other countries for necessary elements.

7. Conclusion

As the curriculum transplanted from developed countries did not function as they would in their place of origin, African countries are steadily revising their mathematics curriculum considering the domestic educational situation and sociocultural aspects, as well as power relations and controls influencing curriculum development. In terms of the spectrum of educational transfer, their situation corresponds to stages 3 or 4 of the educational borrowing theory, as the transfer is often negotiated under certain constraints, or purposefully borrowed. Therefore, it can be said that there has been progress in the endogenous development of mathematics curriculum. On the other hand, along with the trend of globalisation of society in recent years, the globalisation of education has also been expanding. Many African countries are pursuing curriculum revision in accordance with the educational policies framed by international institutions. As a result, the objectives of education are becoming homogeneous worldwide. In other words, it can be said that curriculum transplantation in the modern age proceeds in a different way compared to the colonial period, but with the same end product.

It is expected that the globalisation of education will continue to progress in the future. There will be a need to borrow the curriculum of other countries and comply with the educational policies of international institutions. Even if they are borrowed, it is necessary for the borrowing country to implement and internalise the policies in line with its own educational situation and sociocultural aspects in order to actualise the endogenous development of the curriculum. Anderson-Levitt (2008, p. 355) pointed out that converging towards an international curriculum does not necessarily represent progress because it is not clear if the existence of one particular curriculum is essentially better than the rest. Curriculum borrowing itself is not a problem. The actual issue is that the borrowed curriculum is not adapted to individual countries (Kusaka, Nhêze & Baba, 2020). Curriculum development should be carried out by incorporating the borrowed curriculum into the situation of their own country. A limitation of the study is that this is only an overview of African countries. It is expected that the framework proposed in this study can be used to detail the endogeneity in curriculum development in each country and proceed with the appropriate curriculum development.

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