Secondary Education in Rwanda and Kenya- Focusing on critical thinking and career development-
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English Summary

In 2013, the East African Community (EAC) proposed the 2013 Harmonised Curriculum Framework, which emphasizes the importance of harmonizing curricula at both primary and secondary levels and including the necessity of Competence-Based Education. In line with the Harmonised Curriculum, Rwanda, one of the EAC member states, has introduced a new curriculum called Competence-Based Curriculum (CBC) to its pre-primary, primary and secondary education in January 2016. Compared to its previous, Knowledge-Based Curriculum, application rather than acquisition of knowledge is more emphasized in learning. The teaching method also shifted from teacher-centered to learner-centered which encourages students to think more instead of teachers just giving them knowledge. CBC is designed to improve two categories of students’ competences: basic and generic competences. Importance of critical thinking, recognized as one of the generic competences, is often highly emphasized in all competence-related frameworks. However, the question is Can CBC really enhance students’ critical thinking? This study therefore investigated the attitudes and critical thinking skills of Rwandan students. Since CBC underlines critical thinking for rational career, the relationship between critical thinking and career development of students was also observed. This study was carried out in Nyagatare and Huye districts in September 2016, involving a questionnaire survey targeting 400 students from three schools in total. They were students of Senior 4 and Senior 5, which were 200 each in number. Since CBC is still in a transitional phase and introduced to the curricula of Pre-primary, Primary 1, Primary 4, Senior 1 and Senior 4 as of 2016, this study compared Senior-4 students experiencing the implementation of CBC with Senior-5 ones learning with the former curriculum. It allowed me to analyze to what extent the new curriculum has positive impacts on students in critical thinking.

My fieldwork included not only three types of questionnaires, but also classroom observation and interviews with teachers and students. These surveys were designed as part of follow-up studies, and the further trip to Rwanda will take place in September 2017.

In addition, the survey involving the use of the same questionnaire was conducted in Westlands Nairobi, Kenya. Its results are referred and compared for better understanding of the situation in Rwanda. Although a Competence-Based Curriculum has not been officially developed in Kenya yet, there have been some attempts to take learner-centered methodology into practice. The survey was carried out in October and November 2016, targeting Form-2 students attending national and county schools. This

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grade is equivalent to Senior 4 in Rwanda. Through questionnaires, critical thinking attitudes and skills, and factors relevant to career decision-making in ability, self-efficacy and behavior were examined.

The results show that students' attitudes towards critical thinking does not affect much on their skills of it. Generally, a critical thinking attitude has something to do with critical thinking skills, but its effect size is small. Their critical thinking skills are largely affected by other factors in both cases of Rwanda and Kenya. For career development, there is a strong correlation between self-efficacy and decision-making behavior in the case of Rwanda. This indicates that Rwandan students rely much on self-efficacy in career decision-making process. Meanwhile, the surveyed students in Kenya made some appropriate actions based on performance, regardless of their levels of self-efficacy. It is considered that this is attributed to differences of the ways of guidance on career path. With respect to the relationship between critical thinking and career development, my fieldwork revealed that the critical thinking attitudes of the students, particularly in study, serve as important factors to affect their choices of careers. In other words, nurturing critical thinking attitudes in classroom is essential for pupils' career development.

Japanese Summary

東アフリカ共同体で提案した'2013 Harmonized Curriculum Framework for the East African Community'においても、就学前教育レベルからのコンピテンスベースのカリキュラムの重要性が述べられており、ルワンダをはじめ東アフリカ共同体加盟国を中心に導入又はその検討が進んでいる。ルワンダでは、2016 年 1 月から Competence-Based Curriculum (CBC)の段階的導入が開始された。本研究は、コンピテンスの中でも、ほぼ全てのフレームワークの中で育成必要なコンピテンスの 1 つとして言及されている批判的思考力及び CBCの中でも重要視されているキャリア発達に関着をあて、批判的思考態度、思考力そのもの、キャリア発達との関連性等を考察する。同様の調査を行ったケニアの状況を参考にしながら、最終的に、コンピテンス教育はルワンダにおいて定着するのかどうかも含め検討することが、本研究の関心である。

2016 年 9 月に、Nyagatare 郡及び Huye 郡に位置する公立学校 3 校において、高校 1 年生及び 2 年生を対象に計 400 人(各学年 200 人)の学生に対して、3 種類の英語の質問紙を用いた量的調査及び、教師や生徒に対するインタビューや授業観察といった質的調査も行った。CBC は段階的導入であり、カリキュラムの影響を考察するために、CBCが導入されている高校 1 年生と導入されていない高校 2 年生との比較を行った。分析方法にはパス解析などを用いた。なお、本研究は初年次における CBC の効果測定のために、一年後の同時期(2017 年 9 月)に追跡調査を行う予定である。ケニアでも、2016 年 10 月及び 11 月に公立学校 4 校(国立学校 2 校、県立学校 2 校)において、計 400 人(各学校 100 人)の高校 1 年生を対象に、ルワンダと同様の調査を行った。

本研究は、批判的思考を、認知モデルの 1 つである構成要素モデルの中で扱い、認知的要素である思考力と非認知的要素である批判的思考態度とに分割して、質問紙及びテストを用意し、それぞれ測定した。その結果、批判的思考態度と批判的思考力の関連性は小さく、この傾向はルワンダ及びケニア双方のケースで見受けられた。思考態度と思考力が連動して変化する単純な関係にないことがうかがえた。

キャリア発達に関しては、進路選択過程に着目し、進路選択能力、進路選択自己効力、進路選択行動という 3 つの要素にわけ、分析を行った。その結果、ルワンダでは進路選択過程において能力があった場合でも、適度の自己効力が伴っていない場合は、望ましい進路選択行動に結びつきにくかった。また、進路選択能力が低く自己効力が高い場合では、目標設定のレベル
を誤っていたとしても進路選択行動を起こしてしまうケースが考えられた。反対に、ケニアでは、能力のある生徒は自己効力のレベルに関係なく、進路選択行動が促進される傾向が見られた。反対に、ケニアで
は、能力のある生徒は自己効力のレベルに関係なく、進路選択行動が促進される傾向が見受けられた。この違いを説明する上での考えられる要因としては、教師の進路指導方法の違いが挙げられた。職業選択や大学選択において、ケニアでは生徒のパフォーマンス及び能力に沿ったアドバイスが行われているが、ルワンダでは、その達成が現実的に難しい場合でも、生徒の希望を重視し、達成に向けて頑張るよう先生が促している傾向があった。自分の能力や資質をあまりにも好ましい方向に認知し、現実からかけ離れた高い自己効力を持つ場合、生産的結果につながりにくく、ルワンダにおける早急なキャリア教育の必要性がうかがえた。
批判的思考力とキャリア発達の関連性に関しては、進路選択において重要な要素は批判的思考力よりも、批判的思考態度であることが分かった。とりわけ、学習場面での批判的思考態度は進路選択能力、進路選択自己効力、進路選択行動全てに影響を与えており、学校教育(ルワンダではCBC)を通じて批判的思考態度を育成する意義がキャリア発達において見受けられた。

II. Research Activity

1. Introduction

Rwanda has dramatically developed after experiencing the 1994 genocide. In the last 22 years, its GDP has been growing by a 8% annual rate, and GDP per capita improved from $240 in 2000 to $700 in 2014 (World Bank, n.d.). While more than 70% of the population is still engaged in the agricultural sector, the country’s economic structure has gradually been shifting toward a knowledge-based society (The Government of Rwanda, 2013). As the economic development has been achieved, some noticeable progress is also seen in the education sector.

There have been three major changes in the educational system. First, the government introduced a 12-year basic education program in 2010 and access to education has been expanded at all levels. The Rwandan educational system consists of 6-year primary, 3-year lower secondary, 3-year upper secondary and 4-year higher education. The net enrollment rates for primary and secondary school were 73.3% and 11.0% in 2000, but increased to 96.5% and 31.8% by 2012 (Rwanda Ministry of education, 2013). Second, there has been a shift in the medium of instruction from French to English. Since 2009, English has become the sole medium of instruction from the upper level of primary education. This change was related to certain economic factors. According to Samuelson and Freedman (2010), “the Rwandan government is justifying the switch to English as a medium of instruction by pointing to the global and regional growth of English as the leading language of science, commerce, and economic development” (Samuelson & Freedman 2010, p. 192). The economic factor in the shift to English can also be seen in Rwanda’s taking part in the East African Community (EAC) in 2007 as well as its affiliation with the Commonwealth in 2009. Third, a new curriculum called Competence-Based Curriculum (CBC) has been implemented in Rwanda since January 2016. This curriculum framework covers the pre-primary and twelve-year basic education from the primary to upper-secondary levels (Rwanda Education Board, 2015a). Its emphasis is put on the use of learner-centered (LC) methodology, instead of teacher-centered (TC) one, which was used in the former curriculum. According to Prof. Silas Lwakabamba, the Minister of Education, “Learners will now get the opportunity to apply what they have learned to real life situations” (Rwanda Education Board 2015b, p.3). In addition, this new curriculum matches global trends and is in line with the 2013 Harmonised Curriculum Framework for the East African Community (EAC) (EAC Secretariat, 2014).
This study explores the impacts of Competence-Based Curriculum (CBC) on students’ critical thinking and career development, comparing Rwanda to Kenya without CBC. My visit to these counties was aimed to examining three aspects in details: 1) the relationship between CBC and critical thinking, 2) students’ career development, 3) the relationship between career development and critical thinking. The fieldwork in Rwanda was conducted as a follow-up survey to measure the effects of the implementation of CBC, while the exploration of Kenyan cases did not include the examination of the first aspect due to the lack of its CBC system. In this study, I take both qualitative and quantitative approaches. It is linked to Quality Education, Goal #4 of Sustainable Development Goals.

2. Study area

I explored 400 students from three public schools in two districts: Nyagatare and Huye, Rwanda. All surveyed students are of Senior 4 and 5. The attention to these two grades was intended to show some differences between the students experiencing the old and new curriculum. Students in upper secondary (Senior 4-6) are expected to think more on career development compared to those in lower secondary (Senior 1-3). To measure critical thinking accurately, students were asked to read and understand questions in English. Since the language policy implemented, students of Senior 4 started learning English after Primary 4 and were expected to adequately understand the questions. For this fieldwork, I obtained permissions from both districts and schools. The details of the respondents are shown as Table 1.

Table 1. Details of participants in Rwanda

<table>
<thead>
<tr>
<th></th>
<th>School K</th>
<th>School N</th>
<th>School I</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>S4</td>
<td>33</td>
<td>87</td>
<td>80</td>
<td>200</td>
</tr>
<tr>
<td>S5</td>
<td>37</td>
<td>83</td>
<td>80</td>
<td>200</td>
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</tbody>
</table>

In Kenya, 400 students of Form 2 were explored at 4 public schools for secondary education, including two kinds of them: national, and county schools. Many parents want to make children attend a national school because they consider that it offers a good learning environment with better equipment. Despite this, only 1% of all Kenyan students could enter national schools; 18% of them go to country schools and 48% are students enrolling sub-county ones (Glennerster et al., 2011). The types of schools they are allowed to enter are determined by Kenya Certificate of Primary Education (KCPE): the examination which they take in the last year of the primary education. At the end of secondary education, they take Kenya Certificate of Secondary Education (KCSE), whose outcomes determine whether they can go to universities or not. The average score of KCSE that national-school students get is usually higher than that of county and sub-county school ones. For example, 90% of students attending national schools scored above C+ in 2008, which is a minimum requirement for entering a university. When it comes to county and sub-county schools, its ratio goes down to 43% and 11% (Glennerster et al., 2011).

The interview with the educational officer of Westlands division of Nairobi was held on October 6, 2016, revealing that while a curriculum as well as teaching method remains knowledge-based and teacher-centered, about 30% of schools adopt learner-centered methodology. Remarkably, national schools usually stick to teacher-centered methodology, while some county schools are learner-centered in teaching. Based on the advice of the officer, I chose four schools to visit: two national and two county schools with different approaches to teaching. In 2014, the national schools I visited are ranked top 15 amongst all secondary schools in terms of the results of KCSE (Advance-Africa.com, n.d.).
Table 2: Basic information of visited schools in Kenya

<table>
<thead>
<tr>
<th>School</th>
<th>Number of students</th>
<th># of teachers</th>
</tr>
</thead>
<tbody>
<tr>
<td>School K (national)</td>
<td>1200</td>
<td>60</td>
</tr>
<tr>
<td>School N (national)</td>
<td>1421</td>
<td>67</td>
</tr>
<tr>
<td>School S (county)</td>
<td>1135</td>
<td>51</td>
</tr>
<tr>
<td>School H (county)</td>
<td>400</td>
<td>25</td>
</tr>
</tbody>
</table>

3. Methodology

The questionnaire survey was conducted in Rwanda from September 3 to 30, 2016. I worked closely with an interpreter, student of Rwanda University, who has excellent Kinyarwanda and English skills. To avoid confusion and reduce biases in written language, he always gave the students instructions on how to answer in Kinyarwanda before asking them to fill in the questionnaire. They answered the questions when they were at the break and free.

The trip to Kenya was held in October 2016 to conduct the questionnaire, and I spent the next month on analyzing all responses from both Rwandan and Kenyan schools. During the period of survey, I mostly worked at University of Nairobi, staying at a university dormitory located in Upper Kabete Campus of the College of Agriculture and Veterinary Sciences.

Table 3. Brief explanation of questionnaire

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>About</th>
<th># of questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Critical thinking attitude</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>Critical thinking skill</td>
<td>23</td>
</tr>
<tr>
<td>3</td>
<td>Career development</td>
<td>38</td>
</tr>
</tbody>
</table>

Table 3 shows the composition of the questionnaire I used for this survey. Questionnaire 1 was designed to examine students’ critical thinking attitudes. As the componental model of critical thinking defines, critical thinking is composed of cognitive factors: skills and knowledge, and non-cognitive factor: attitude. A critical thinking attitude serves to prepare for exercise and directs critical thinking skills. To demonstrate critical thinking, a certain level of critical thinking attitude necessitates that of critical thinking skills, and vice versa. In other words, if a critical thinking attitude is not appropriately involved, the high level of critical thinking skills is not adequate to exercise critical thinking. Therefore, the assessment of both critical thinking attitude and skills is necessary for measuring critical thinking. When making Questionnaire 1, I drew on a questionnaire used by Kusumi et al. (2016). It divides a critical thinking attitude into two categories: one in general and the other in study. A critical thinking attitude in study means an attitude toward others’ opinions in classroom. To examine the level of each type of critical thinking attitude, relevant question items are expected to answer on a scale of disagree=1 to agree=5. Apart from them, Questionnaire 1 included questions about personal information of the respondents (e.g. age, sex, family’s main occupation) and their hopes about future occupation.

Questionnaire 2 was developed based on Cornell Critical Thinking Test X. This format has been widely used around the world, and its reliability as well as the validity of its scale is confirmed by many studies. It is composed of 72 items in 3 section, which cover the multi-aspects of critical thinking, including induction, deduction, observation, credibility, and assumptions (Ennis et al., 1985). Cornell Critical Thinking Test Z is another version of the format of the test to examine critical thinking skills. Level X is aimed at fifth to twelfth graders, whereas Level Z is designed for advanced, gifted high-school
students, college students, graduate students, and adults. Prior to the questionnaire survey, the interviews with principals and teachers of Rwandan secondary schools allowed me to assume that the respondents were unlikely to have high critical thinking skills and much reading habits. Hence, I employed Test X rather than Z. Because of a limited time to conduct an examination as well as the level of students’ academic ability in Rwanda, the number of the question items were reduced to 23. The test used is mainly about hypothesis testing. Students were required to read a short story and judge whether the fact supports given hypotheses. The ability of inductive reasoning was mainly tested as a part of critical thinking. In this test, answers to the questions are led by understanding that the fact is not a proof of a hypothesis but can be a fragment of information to support it (Ennis et al., 1985).

Questionnaire 3 was designed to measure three elements relevant to career development: career decision-making self-efficacy, career decision-making ability, and career decision-making behavior. For assessment of decision-making self-efficacy, I used Career Decision Making Self-Efficacy Scale-Short Form (CDMSE-SF) proposed by Creed and Watson (2002). The question items to examine decision-making ability were developed based on the revised model of Career Maturity Inventory-Screening Form (CMI-SF) by Savickas and Porfeli (2011). Finally, Tominaga’s scale (2010) was applied to assessing decision-making behavior.

After collecting the completed questionnaires, path analysis was employed to evaluate the relationship between students’ critical thinking attitudes, and career development.

4. Research findings and Discussion

4-1. Critical thinking

The analysis of the outcome of the questionnaire survey shows that a critical thinking attitude is not much related to critical thinking skills (Figure 1 and 2). A critical thinking attitude in general (CT-G) is found to affect critical thinking skills, but its effect size is small. Rather, critical thinking is affected largely by other factors besides the attitude. This tendency was in common seen in both cases of Rwanda and Kenya. It seems to be connected with some question items of the questionnaire, which are in terms of learning motivation. Learning motivation is important in critical thinking attitude, but it is not directly related to the exercise of critical thinking skills. Regardless of difficulty in measurement, critical thinking is considered to be something educable (Kusumi, 2005). As previously mentioned, the relationship between critical thinking and learner-centered methodology is one of the core principles of CBC. No significant difference is found among surveyed Kenyan schools, but responses from students attending one of the county schools with learner-centered methodology show the higher mean value of the critical thinking test in comparison with the outcomes of the questionnaires at two prestigious national schools, which conventionally follow teacher-centered one. This implies the potential of the implementation of CBC to affect critical thinking skills.
4-2. Career Development

The path models of Figure 3 and 4 are diagrams of the relationships among three factors: career decision-making ability, career decision-making self-efficacy, and career decision-making behavior, showing differences between Rwandan and Kenyan cases. In Figure 3, paths CDM—A→CDM—SE (p<.001) and CDM—SE→CDM—B (p<.001) are statistically meaningful. However, a path CDM—A to CDM-B is not significant in the case of Rwanda. In theory, a person with a high level of career decision-making ability is expected to exercise preferred career decision-making behavior. However, this general tendency is not found in the case of Rwanda. An indirect effect (.16) from CDM-A to CDM-B through CDM-SE is higher than a direct effect (.04). This means that career decision-making self-efficacy has strong influence on career decision-making behavior. In other words, if the level of self-efficacy is not enough, a sufficient career decision-making ability does not necessarily result in preferred behavior. In addition, career decision-making ability does not necessarily explain career decision-making self-efficacy demonstrated by multiple correlation coefficients (.07). It could be assumed that in practice, preferred occupations are not achieved by students, who have high self-efficacy, but are not equipped with appropriate skills.

Meanwhile, behaviors of Kenyan students are likely to be linked with their performances rather than a certain level of self-efficacy. It is considered that this is attributed to differences in the ways of giving career advice to students. Teachers in Kenya tend to prioritize a level of student’s performance in career advice. The teachers urge students to change their preferred occupations when recognizing them insufficient for achieving their goals in performance. By contrast, teachers in Rwanda put more emphasis on students’ desire, encouraging them to make efforts for their preferred career paths even though their choices are unrealistic. If their self-efficiency and academic levels are not appropriately considered in choosing their paths, this approach to career advice would not be fruitful for Rwandan students. CBC contributes to the enhancement of critical thinking attitude, but is unlikely to be effective in solving this problem. Therefore, Rwandan schools are in need of more functional career guidance.
4-3. Relationship between critical thinking and career development

Figure 5 and 6 show the path models linking factors of critical thinking and career development. These diagrams are slightly different between the cases of Rwanda and Kenya, but have a common characteristic; in fact, critical thinking attitudes rather than skills are crucial factors affecting career decision-making ones. In particular, a critical thinking attitude in study (CT-S) can affect all career decision-making factors: ability, self-efficacy and behavior. This means that if CBC facilitates the enhancement of critical thinking attitude in study, students would acquire competence and confidences in career decision-making and eventually demonstrate appropriate actions to achieve their preferred career paths. Rwandan cases show that having self-efficacy tends to direct students to unrealistic career paths. However, once students become capable of setting reasonable career goals, the path model is likely to be shifted to Kenyan model, where career decision-making ability could directly affect career decision-making action.
5. Conclusion

The exploration of responses from the schools I visited through the fieldwork reveals that critical thinking attitudes are found to have little influence on critical thinking skills. This follow-up survey enabled me to demonstrate that while CBC contributes to enhancing students’ critical thinking attitude in study, it is unlikely to have a direct effect on critical thinking skills. In terms of career development, Rwandan students rely largely upon career decision-making self-efficacy to take action on their preferred career paths. This implies the danger of setting unrealistic goals, which makes students to ignore their own levels of career decision-making abilities and do unproductive things. Meanwhile, Kenyan students seem to behave according to their levels of performance. It echoes differences in the ways that teachers give students career advice in Rwanda and Kenya. The analysis of the collected data allowed me to gain some implications on the relationship between critical thinking and career development, demonstrating that a critical thinking attitude, particularly critical thinking attitude in study, is effective in enhancing career decision-making factors.

Through classroom observation and interviews with teachers and students, I recognized that CBC brings better learning environments for students. They did not just copy what was written from the blackboard; rather, they wrote down their understanding of what they were taught in their notebooks. In the classroom, students were involved in active learning, which allowed them to have many opportunities to discuss and interact with teachers as well as classmates. The effect of CBC on critical thinking skills is not necessarily clarified, but it seems to be beneficial to students’ critical thinking attitude in study. Meanwhile, this study implies that Rwandan schools are hoped to prevent students from having unrealistic career goals by providing them with functional career guidance beside CBC. At the time of fieldwork, CBC was introduced in Senior 4 only, but Senior 5 and 6 were also planned to be grades where it is newly implemented. This means that teachers are expected to practice both the systematic, effective way of teaching for national exam and apparently time-consuming CBC, which are contrasting in character.

Acknowledgement

I really want to thank GLTP staff for great support. I also want to express my gratitude to Professor. David Mungai at Nairobi University, who supervised me during my stay in Kenya. Many thanks to educational officers in Westland divisions as well. In addition, I really appreciate principals, teachers, and students in Rwanda and Kenya who helped me with carrying out the study. I could have great experiences only because I had support from these generous people.

III. Reflection to the GLTP in Africa

I really had great experiences throughout my stay in Rwanda and Kenya. It exceeded my expectation. I had mainly two reasons to apply GLTP in Africa. First, I thought this experience would be significant in order for me to become educational specialist in Africa. I plan to start an internship at International organization this year and therefore going through problems and facing the reality of educational situation in countries in Africa were expected to be fruitful. Second, I thought it would be great opportunity to broaden my outlook in study from Rwanda to East African countries. I had been focusing mainly on Rwanda and studying in Kenya was considered to be beneficial.

Even I gained a lot of support from many people, there were few challenges I faced. The biggest challenge I had to overcome was when schools asked me to show the research permit from NACOSTI
which I was still in the process of applying. One or two principals were very rigid telling me that I had to show the permit first, but I had a concern that the schools would be closed by the time I receive the permit. Therefore, I had to persuade them by all means and I eventually managed it. At the end, I showed my research findings to teachers and principals at school along with research permit and they were very happy to know.

As I mentioned, I plan to join the internship in International organization for about a year term. I believe that the experiences I gained through GLTP in Africa would help me to go through some hardships. In addition, since I lived in a university dormitory with other graduate students, I had great opportunities to deepen my understanding on cultures and their thoughts on some important issues which are not only limited to education. I really recommend this programme to others who are interested in Africa and want to have great experiences in the field.
References


