

# VVOB Paper

## *Conceptions of learning and uptake of learner-centred pedagogy in initial teacher education in Rwanda*

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## Content

|   |           |
|---|-----------|
| <b>Content</b>  | <b>1</b>  |
| <b>Colophon</b>   | <b>3</b>  |
| <b>Abstract</b>   | <b>4</b>  |
| <b>1. Introduction</b>  | <b>5</b>  |
| 1.1. Promotion of Learner-centred Pedagogy in Teacher Education in Rwanda | 5         |
| 1.2. Learner-centred Pedagogy in Sub-Saharan Africa                       | 5         |
| <b>2. Conceptual framework</b>  | <b>7</b>  |
| <b>3. Research objective</b>  | <b>8</b>  |
| <b>4. Research Methodology</b>  | <b>9</b>  |
| 4.1. Data Collection  | 9         |
| 4.2. Data Analysis  | 9         |
| <b>5. Findings</b>  | <b>10</b> |
| 5.1. Conceptions of Student Learning                                      | 10        |
| 5.2. Pedagogical Knowledge  | 11        |
| 5.3. Uptake of LCP  | 11        |
| 5.4. Factors influencing or constraining uptake of LCP                    | 12        |
| 5.4.1. Availability of LCP resources in the TTC                           | 13        |
| 5.4.2. Cooperation and sharing amongst colleagues                         | 14        |
| 5.4.3. Use of ICT supporting student teaching                             | 14        |
| <b>6. Conclusions</b>   | <b>15</b> |
| <b>7. Recommendations for Continuing Professional Development</b>         | <b>16</b> |
| <b>References</b>   | <b>17</b> |

## Colophon

### VVOB Paper

*Conceptions of learning and uptake of learner-centred pedagogy in initial teacher education in Rwanda*

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## Abstract

This study provides an analysis of the uptake of Learner-Centred Pedagogy (LCP) in initial teacher education in Rwanda. The promotion of LCP is high on the educational reform agenda in many sub-Saharan African countries. LCP engages learners in critical thinking, problem solving and decision taking – seen as crucial transferable skills for sustainable development. An important strategy to prepare future teachers is to model LCP in initial teacher education. However, as in many other countries around the world, a critical challenge is teacher educators' limited uptake of LCP in their own pedagogical practice. It seems not easy to change from a transmission model to a reflective practitioner model of teaching and learning.

At the start of a professional development trajectory in 2014, 228 teacher educators in all Primary Teacher Training Colleges in Rwanda completed a questionnaire (response of 77%), assessing factors such as access to resources, professional development opportunities, conceptions of learning, and uptake of LCP. The research describes that Rwandan teacher educators adhere to constructivist approaches of learning, and at the same time believe that learning is about taking in knowledge through transmission and reproduction as well. Multiple regression analysis reveals that the factor contributing most to the explained variance in the uptake of LCP is cooperation and sharing amongst colleagues ( $\beta = .315$ ). The study discusses the limitations of the construct where learning as construction of knowledge is opposed to learning as intake of knowledge; and explores how sharing and cooperation amongst colleagues influences the uptake of LCP.

## 1. Introduction

### 1.1. Promotion of Learner-centred Pedagogy in Teacher Education in Rwanda

This study takes place in the framework of the programme on Learning Outcomes in Primary Education (LOPE) between the University of Rwanda – College of Education (URCE) and the Flemish Association for Development Cooperation and Technical Assistance (VVOB – Education for Development). One aim of the programme is to promote learner-centred pedagogy (LCP) in teacher education in Rwanda for all future primary school teachers. While the project addresses leadership and management performance at institutional level of participating Teacher Training Colleges (TTC), the specific target is to improve the quality of teaching and learning in the TTCs. The programme seeks to achieve this through professional development of all tutors (teacher educators) in the TTCs and integration of LCP in the initial teacher training curriculum. The programme is carried out over a three-year period (2014-16) following a cascade model involving capacity building of 54 tutors, followed-up by dissemination to all tutors in 13 TTCs nationwide.

This study provides an analysis of the current status of teaching and learning and the conditions for application of LCP in TTCs. After a desk review of studies and monitoring reports that were carried out by other partners in initial teacher training in Rwanda, a quantitative self-report questionnaire was developed to complement the findings of these studies. Data collected on access to resources, attitudes, knowledge, skills and practice at the level of the individual tutor, allows for an exploration of the interrelations between these factors, leading to more insight in the conditions for LCP in teacher education. The study initiates the design of the professional development programme on LCP for the tutors.

In what follows we first provide a short background on the promotion of LCP in Sub-Saharan Africa (SSA), largely based on the literature study of UNESCO-IICBA, by Vavrus, Thomas & Bartlett (2011). Afterwards, we describe the conceptual framework for the study carried out in Rwanda, and we detail the methodology of the self-report questionnaire. We briefly present some findings, focusing on the key factors for promotion of LCP. In the conclusion, we discuss the limitations of the construct of learning as applied in the study; and explore how certain factors can be addressed in a professional development programme for TTC tutors in Rwanda.

### 1.2. Learner-centred Pedagogy in Sub-Saharan Africa

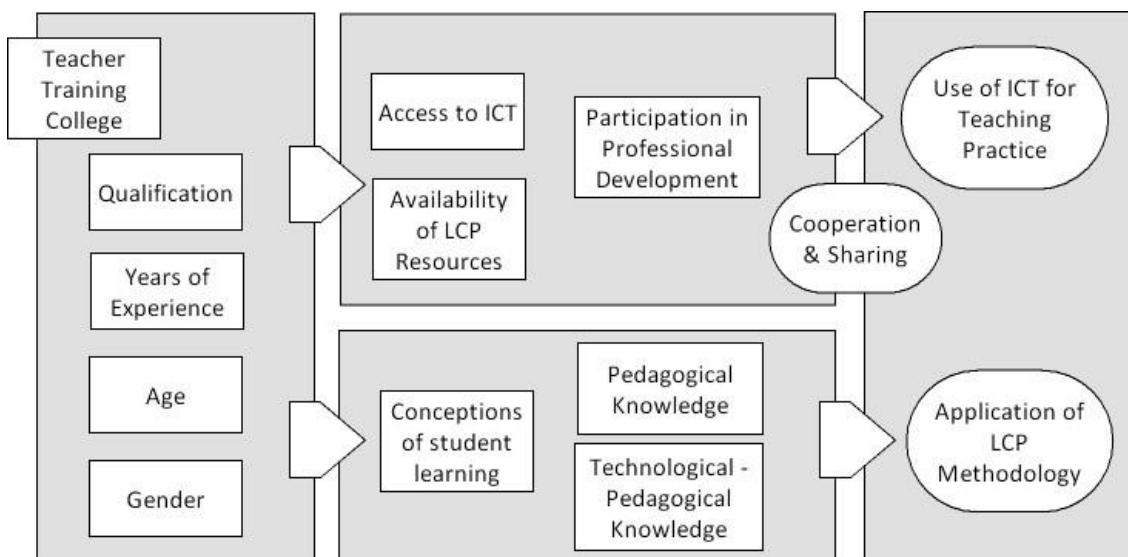
The gradual shift in policy from teacher-centred pedagogy toward learner-centred pedagogy in SSA has been a result of economic, educational, and political factors. According to Vavrus et al. (2011) the use of LCP also emerged from the view shared by certain international organisations and national policymakers that this approach would contribute to the expansion of democracy. The adoption of Education for All as a global policy which included “active learning techniques” and “relevant curriculum” among the conditions for quality education also contributed to the emergence of LCP. Based on these factors, global educational trends toward the adoption of LCP have been noted and adopted by many African policymakers and planners. Unfortunately, it appears that the learner-centred pedagogy is actually not fully implemented in practice. Teacher education reform in several African countries, have been attempting to integrate LCP into the preparation of teachers. One of the main challenges faced by teachers in using LCP is *Teachers’ educators’ limited use of LCP*. It appears that teacher preparation programs have generally not adequately integrated this approach into the curriculum. Research shows that with few exceptions, teacher education programs in SSA utilize the technical rationality model based on a behaviourist view of teaching and learning rather than the reflective practitioner model even as they teach student teachers to use active learning strategies.

The recommendations made by Vavrus et al. (2011), are that if LCP is to move from paper to practice, policymakers should try to address such challenges and focus on policy considerations that reorganize teacher preparation to integrate LCP in all subjects; take into consideration the content and length of study for initial teacher education and opportunities for continuing professional development through in-service programs; and show how LCP should be practically integrated in the curriculum and national examination.

## 2. Conceptual framework

Based on literature on the topic and discussions amongst the authors, a number of factors were identified that can hinder or influence the uptake and application of LCP in teacher education in Rwanda. In the conceptual framework hereunder (fig. 1) we conceptualize these factors and the interrelatedness of these factors at the level of the individual tutor. Apart from a set of non-manipulative factors, like teacher qualification, years of experience, age and gender, there are a series of external manipulative factors, or conditions such as availability of LCP resources and access to ICT and participation in professional development. On the other hand, there are internal factors such as conceptions of student learning (attitudes) and pedagogical and technological-pedagogical knowledge. As dependent variables, this model not only includes the application of LCP, but also the practice of cooperation and sharing amongst tutors and the use of ICT for teaching and support of student learning. These dependent variables are expected to influence each other as well.

**Figure 1: Factors influencing uptake of LCP**



### 3. Research objective

The objective for this baseline study is to assess the current situation at the level of the tutors on the 13 TTCs with regards to variables in the conceptual framework above (fig. 1). For this paper, we look into some factors of specific interest.

We first want to look into and provide a descriptive analysis of tutors' conceptions of student learning as well as their pedagogical knowledge. We want to describe tutors' uptake of LCP in more detail, after which we want to focus on an assessment of the influence of the independent variables on the application and uptake of LCP, and on the correlation between these different factors. Finally, a descriptive analysis of the significant factors should lead to more insight and recommendations for professional development for tutors on the 13 TTCs.

## 4. Research Methodology

### 4.1. Data Collection

A self-report questionnaire for TTC tutors was developed with questions and questionnaire scales on all variables as depicted in the conceptual framework. The questionnaire scales are based on international research on LCP and adopted to the context of teacher education in Rwanda. Cultural and practical interpretations were discussed with Rwandan education experts that were engaged in the project. The final questionnaire consists of 94 items.

All (13) TTCs in Rwanda participated in this study. Data collection took place from May to July 2014, using the self-report questionnaire presented to all teaching staff of the participating TTCs. In total 228 questionnaires were completed by the respondents, on a total of 296 tutors in the TTCs (response rate of 77.0 %), with 70.5 % male and 29.5 % female respondents. The mean age of the respondents is 34.35 years and the average years of experience are 7.36 years. The majority (81.9 %) of the tutors has an A0 qualification, 14.0 % has A1 and the remaining 4.1 % has A2.

From the nine questionnaire scales that are included in the questionnaire, all but one of them have reliability coefficients above 0.70 Cronbach Alpha ( $\alpha$ ). One questionnaire scale, on conceptions of student learning – intake of knowledge, is not reliable ( $\alpha = 0.58$ ) and therefore not used for exploratory analysis.

### 4.2. Data Analysis

*Descriptive analysis* of the questionnaire data is applied to draw a picture of the situation of TTCs in Rwanda concerning tutors' application of LCP methods and techniques as well as their access to LCP resources, conceptions of student learning, pedagogical knowledge and cooperation and sharing.

*Exploratory multiple regression analysis* is applied to analyse the influence and interrelatedness of the non-manipulative and manipulative factors at the level of the tutor on use of ICT in teaching practice and application of LCP.

## 5. Findings

### 5.1. Conceptions of Student Learning

It is believed that teaching practices are largely directed and influenced by the learning theories and that students' approaches to learning influences teachers' approaches to teaching (Morgan, Gibbs, & Taylor, 1980; Prosser and Trigwell, 1999). Vermunt & Vermetten (2004) define conceptions of learning as a coherent system of knowledge and beliefs about learning related phenomena. They distinguish different conceptions of learning. In this study only two conceptions of learning are assessed and included in the questionnaire, due to pragmatic reasons: 'Construction of knowledge' and 'Intake of knowledge'. The first refers to conceptions of learning as constructing of own knowledge and insights. Most learning activities are seen as tasks of students. 'Intake of knowledge' refers to conceptions of learning as taking in knowledge provided by education through memorizing and reproducing; other learning activities are seen as tasks of teachers (Vermunt & Vermetten, 2004). Respondents were asked to indicate on a five-point scale the degree to which the described views and motives, in the form of statements, correspond to their educational beliefs.

Factor analysis on all items asking for conceptions of student learning (Extraction method: PCA, 2 factors retained) reveals two dimensions: student learning as intake of knowledge and student learning as construction of knowledge. Only the items for the subscale in learning as construction of knowledge load as theoretically expected. Only this subscale is reliable.

**Table 1: Conceptions of student learning – Construction of Knowledge**

| Conceptions of student learning (Construction of Knowledge)  |      |       | Entirely disagree | Disagree | Neutral | Agree | Entirely agree |
|--|------|-------|-------------------|----------|---------|-------|----------------|
| Q7: To what extent do you agree ...  | M    | SD    | %                 | %        | %       | %     | %              |
| (2) Students themselves should take initiative to consult alternative sources in case they don't understand a part of the subject matter.  | 3.97 | 0.949 | 1.8               | 9.4      | 7.6     | 52.7  | 28.6           |
| (6) Students should summarize in their own words what is being meant in the subject matter in order to learn.  | 4.04 | 0.923 | 0.9               | 8.6      | 9.1     | 48.2  | 33.2           |
| (8) To verify whether they master the subject matter, students should try to rephrase the main ideas in their own words  | 4.20 | 0.824 | 0.9               | 5.4      | 4.5     | 51.8  | 37.5           |
| (11) Students should take the initiative themselves to look for connections in the subject matter.   | 3.70 | 1.037 | 3.6               | 12.6     | 13.9    | 50.2  | 19.7           |
| (13) Good education is education that leaves part of the preparations to the students (e.g. collection of background readings, preparation of presentations,...).                | 3.81 | 1.069 | 3.2               | 11.9     | 13.2    | 43.8  | 27.9           |
| (14) To check their learning progress, students should themselves try to formulate and answer questions on the subject matter.   | 3.92 | 0.949 | 2.7               | 8.4      | 8.0     | 56.2  | 24.8           |
| (15) In my opinion, students should, next to the books they are supposed to study, also conduct their personal research to find out what has been written on a particular topic. | 4.17 | 0.858 | 0.9               | 5.8      | 7.1     | 48.2  | 38.1           |
| (17) Students themselves should try finding examples of the subject matter.  | 4.05 | 0.845 | 0.9               | 5.7      | 10.6    | 52.9  | 30.0           |

The respondents in this study strongly find themselves in the conception of learning as construction of knowledge ( $M = 3.99$ , max. = 5). To a large extent, surveyed respondents agree or entirely agree with the conception of learning as construction of knowledge (see table 1). For instance, 89.3 % affirm that

they verify whether students master the subject matter by inviting them to rephrase the main ideas in their own words.

At the same time, respondents also find themselves in some statements reflecting the conception of learning as intake of knowledge. For instance, 73.3 % agrees, or entirely agrees that students should be capable of reproducing facts presented. Nevertheless, 58.1 % disagrees, or entirely disagrees that tutors should teach the subject matter exactly as it is presented in the books.

## 5.2. Pedagogical Knowledge

Schmidt et al. (2009) developed and validated a self-report questionnaire to collect data on teachers' self-assessment of the seven knowledge domains within the Technological-Pedagogical-Content Knowledge (TPCK) framework. For our research, we selected a 5-point Likert scale on pedagogical knowledge (PK).

Teacher educators on average perceive to have good pedagogical knowledge ( $M = 4.22$ , max. = 5). The majority of the surveyed respondents agree or entirely agree that they know how to assess student performance in the classroom (92.0 %), to adapt teaching based on what students currently understand (91.8 %), and to adapt teaching style to different learners (89.7 %). The majority also agrees they know how to assess student learning in multiple ways (91.2 %), to use a wide range of teaching approaches in a classroom setting (86.60 %), and to organize and maintain classroom management (94.2 %).

## 5.3. Uptake of LCP

To measure the application of teaching methods, we developed a series of items starting from a mapping exercise by Rwandan education experts on teaching methods being applied in teacher education in Rwanda. In the resulting 4-point Likert scale, the respondents were asked to what extent they let their students take responsibility for their learning, how they let their students cooperate and what teaching activities they let their students engage with.

Most of the respondent tutors indicate that they sometimes engage their students in active teaching and learning (ATL) and a significant proportion even regularly (see table 2). For example, 57.5 % of tutors indicate they regularly let students collaborate on certain tasks, or 49.5 % regularly let students summarize their learning. 52.9 % sometimes let students reflect on their process of achieving goals. Nevertheless, a substantial proportion of tutors never or rarely engage their students in ATL through more innovative approaches, such as outdoor activities using a project-based learning approach (43.4 %) and working on independent learning projects (35.5 %). Also letting students work in corners (or learning stations) is not very popular.

**Table 2: Uptake of LCP – Engagement of Students**

| <i>Engagement of students</i>  |      |       |      | Never | Rarely | Sometimes | Regularly |
|--|------|-------|------|-------|--------|-----------|-----------|
| Q13: To what extent you let your students ...  | M    | SD    | %    | %     | %      | %         | %         |
| (1) Define their own learning goals  | 3.14 | 0.794 | 5.4  | 9.4   | 51.3   | 33.9      |           |
| (2) Identify strategies for achieving their goals  | 3.23 | 0.755 | 2.7  | 11.3  | 45.9   | 40.1      |           |
| (3) Document their learning projects when working on tasks   | 3.10 | 0.818 | 5.4  | 12.6  | 48.6   | 33.3      |           |
| (4) Learn in their own learning style and pace   | 3.03 | 0.807 | 5.5  | 14.6  | 51.6   | 28.3      |           |
| (5) Collaborate on certain tasks   | 3.52 | 0.600 | 0.0  | 5.4   | 37.1   | 57.5      |           |
| (6) Reflect on their process of achieving their goals  | 3.20 | 0.698 | 1.8  | 10.9  | 52.9   | 34.4      |           |
| (7) Work in corners/learning stations  | 2.82 | 0.853 | 10.1 | 16.1  | 54.8   | 18.9      |           |
| (8) Do outdoor activities using a <i>Project-Based Learning</i> approach                                     | 2.52 | 0.967 | 19.4 | 24.0  | 41.9   | 14.7      |           |
| (9) Do classroom activities using a <i>Problem-Based Learning</i> approach (starting from a defined problem) | 2.97 | 0.860 | 7.6  | 15.6  | 49.1   | 27.7      |           |
| (10) Work on independent learning projects   | 2.74 | 0.907 | 10.8 | 24.7  | 43.9   | 20.6      |           |
| (11) Work on group learning projects   | 3.17 | 0.828 | 6.3  | 8.1   | 47.7   | 37.8      |           |
| (12) Sharing and comparing their solutions   | 3.30 | 0.800 | 4.5  | 7.7   | 40.7   | 47.1      |           |
| (13) Summarize their learning  | 3.40 | 0.684 | 1.4  | 7.3   | 41.8   | 49.5      |           |
| (14) Apply learnt knowledge  | 3.32 | 0.746 | 3.2  | 7.3   | 44.1   | 45.5      |           |
| (15) Do self-study individually  | 3.18 | 0.781 | 4.1  | 10.9  | 48.4   | 36.7      |           |
| (16) Do self-assessment (self-correction exercises)  | 3.02 | 0.862 | 8.2  | 11.4  | 50.5   | 30.0      |           |
| (17) Do peer- and group assessment   | 3.18 | 0.867 | 6.8  | 9.5   | 42.3   | 41.4      |           |

#### 5.4. Factors influencing or constraining uptake of LCP

In table 3, the influence of all of the factors of the conceptual model on the uptake of LCP is analysed. A hierarchy of sets of independent variables was formed and tests were carried out on the significance of increments to R<sup>2</sup> by means of the F ratio. In our research we started with non-manipulative variables at the level of the tutor (set 1). These variables were expected to be relevant to the dependent variable (application of LCP), but had to be controlled when measuring the contribution of manipulative teacher-level factors. In the first place we wanted to assess the importance of access to resources (both ICT and other resources for promotion of LCP) and professional development opportunities (set 2) after which we wanted to assess the net influence of pedagogical and technological-pedagogical knowledge (set 3) and conceptions of student learning (set 4). We finally wanted to reflect on the importance of the tutors' practice of cooperation and sharing and the use of ICT for teaching and support of student learning (set 5).

Hierarchical multiple regression analysis resulted in five models. Four of these models significantly explain a proportion of variance in the application of LCP (see table 14). Non-manipulative factors at the teacher level alone do not significantly explain any variance in the application of LCP. Nevertheless, women tend to display a more limited application of LCP than men, while age has a small negative influence on intensity and diversity of application of LCP. The influence of gender and age loses significance however, after entering factors such as access to ICT, and availability of LCP resources in the TTCs. Even though access to ICT does not significantly influence the uptake of LCP, the perceived availability of LCP resources in the TTCs has a positive influence on the application of LCP, also after adding other factors to the model ( $\beta$  of .252 to .113). Participation in professional

development, own initiatives to deepen knowledge on integration of ICT or LCP or participation in communities of practice as such does not influence the uptake of LCP. However, pedagogical knowledge of the tutors does have a significant and positive effect, which is not the case for technological-pedagogical knowledge. Tutors' attitudes and conceptions on student learning as construction of knowledge do not influence the application of LCP. Nevertheless, those that actively cooperate and share knowledge and skills with peers and colleagues in their TTCs will also apply more regularly and more diverse LCP approaches ( $\beta = .315$ ). Also those that let their students engage more often with ICT let them engage also more regularly with LCP ( $\beta = .119$ ).

**Table 3: Factor Influencing or Constraining Uptake of LCP**

| Factors   |                                 | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---------------------------------|---------|---------|---------|---------|---------|
| Non-man. factors                                      | Gender (male)                   | .262*   | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Age                             | -.022*  | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Years of experience             | n.s.    | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Qualification A1                | n.s.    | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Qualification A0                | n.s.    | n.s.    | n.s.    | n.s.    | n.s.    |
| Access and prof. dev.                                 | Laptop – for self               | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Laptop – sharing with others    | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Projector                       | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Internet – Home and in TTC      | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Internet – Home                 | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Internet – TTC                  | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Internet – Other place          | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | LCP resources in TTC            | -       | .252*** | .212*** | .210*** | .113*   |
|   | Training/workshop/conferences   | -       | n.s.    | n.s.    | n.s.    | n.s.    |
|   | Reading/learning                | -       | n.s.    | n.s.    | n.s.    | n.s.    |
| Knowledge   | Pedagogical knowledge           | -       | -       | .366*** | .338**  | .274**  |
|   | Tech.-ped. knowledge            | -       | -       | n.s.    | n.s.    | n.s.    |
| Attitude  | Construction of knowledge       | -       | -       | -       | n.s.    | n.s.    |
| Practice  | Cooperation and sharing         | -       | -       | -       | -       | .315*** |
|   | Use of ICT for teaching         | -       | -       | -       | -       | n.s.    |
|   | Use of ICT for student learning | -       | -       | -       | -       | .119*   |
| Adjusted R <sup>2</sup> 'Student engagement with LCP' |                                 | .061    | .166    | .302    | .298    | .463    |
| F Change  |                                 |         | 2.621   | 2.547   | 3.983   | 3.766   |
| df1   |                                 |         | 5       | 16      | 18      | 19      |
| sig. F Change   |                                 |         | .028    | .002    | .000    | .000    |

Note – Not included in model, n.s. not significant, \* p < .05, \*\* p < .01, \*\*\* p < .001.

The final model explains 46.3 % of variance in the dependent variable. The factors contributing the most to the explained variance in the uptake of LCP in the final model remain, apart from *pedagogical knowledge*, the *availability to LCP resources in the TTC*, *cooperation and sharing amongst colleagues* and *use of ICT supporting student learning*.

These factors are now described in more detail.

#### 5.4.1. Availability of LCP resources in the TTC

The respondents were asked to give their opinion on access to other resources in their TTC that can support LCP, such as self-study materials, training materials, good practices and a library or resource centre where such materials are available. Less than half of the TTC tutors agree that they had access to sufficient relevant self-study materials (45.8 %) and even less (37.6 %) agree to have sufficient relevant training materials. Also related to the sharing of good practices the respondents are not in complete agreement. Quite some respondents are neutral or disagree that this is done in their TTC. More than half of the respondents agree however that there is a well-functioning and up to date library in their TTC. On the other hand, most respondents agree that resources are not available through online and searchable open resource centres.

#### **5.4.2. Cooperation and sharing amongst colleagues**

Similar to the items on the application of teaching methods and techniques and the use of ICT for teaching and support of student learning, respondents were asked on a four-point Likert scale the extent to which they cooperate and share with their colleagues and peers, and this in different modalities, i.e. through lesson observation and feedback, research/studies, study visits, work discussions and meetings, etc.

The majority of the respondents do sometimes cooperate and share knowledge, skills and experiences with their colleagues, for example through lesson observation and feedback (48.4 %), trainings and workshops (57.8 %), or during work discussions and meetings (52.0 %). However, 50.4 % never or rarely cooperates through shared projects, and 37.9 % never or rarely does that through study visits.

#### **5.4.3. Use of ICT supporting student teaching**

To measure the use of ICT in teaching practice, we used an instrument developed by Peeraer and Van Petegem (2012). This set of questions comprises a 4-point Likert scale on educators' self-reported use of ICT for teaching purposes. The self-reporting measurement instrument answers the need to analyse ICT-based innovations on a continuum, ranging from the assimilation level through the transition level, and up to the transformation level. High scores indicate a more regular use of ICT for teaching practice.

Respondents never or rarely exploit ICT tools for teaching their subjects or for support of student learning. More specifically, 58.5 % of tutors never integrate subject specific software into lectures whereas 50.7 % never access information through CD-ROM/DVD as resource materials during lecturing. Likewise the majority of tutors never communicate electronically with their students. Tutors sometimes use these tools for producing electronic documents and accessing information. Concerning with students' accessibility to ICT resources, majority of tutors declare never or rarely engage their students to work with computers for their self-learning.

## 6. Conclusions

A majority of TTC tutors perceive student learning as knowledge construction and therefore adhere to constructivist approaches of learning, in line with the overall education reform discourse in SSA, to integrate learner-centred pedagogy into the teaching and learning process. The majority of tutors participating in this study also affirm to have the pedagogical knowledge that is required for an educator to efficiently plan and manage the classroom, adapt teaching to learners' characteristics and assess their performance. However, intake and construction of knowledge are not necessarily perceived as opposing poles for teacher educators in Rwanda, contrary to what is often found among Western educators. Stavrus et al. (2011), in the framework of the UNESCO-IICBA research on LCP in SSA, already introduced the concept of a spectrum of teaching rather than a dichotomy to suggest that teachers should be encouraged to develop a repertoire of methods to use in the classroom and should draw upon their professional knowledge in determining when more teacher-centred or more learner-centred methods are appropriate.

Research findings showed earlier, that there is often a gap between what teachers affirm to know and belief about learner-centred pedagogy and what they practice in classroom (Barrett et al., 2007). Concerning perceived engagement of students in LCP, respondent tutors in this study, indicate that they engage their students in active teaching and learning (ATL), especially in well-known approaches such as group work. However, a portion of tutors never engage their students in innovative and transformative approaches such as project-based or independent learning. When it comes to the use of ICT for teaching and support of student learning, most tutors do not report a regular uptake of the different suggested applications such as presentation tools, or word processing tools, or electronic communication with students.

Multiple analysis regression revealed that factors contributing the most to the explained variance in the uptake of LCP are, apart from pedagogical knowledge, the availability to LCP resources in the TTC, cooperation and sharing amongst colleagues and use of ICT supporting student learning.

With regards to LCP resources, it is clear that self-study materials, training materials, good practices, library/resource centre, and online and searchable open resource centre are available in TTCs, but not sufficiently. The question also remains whether the existing available resources are adequately exploited. Even though sharing and cooperation does take place, there seems to be little routine in regular sharing of knowledge, skills and experiences between TTC tutors. Finally, it can be concluded that ICT tools are not playing a significant role in supporting the teaching and learning.

## 7. Recommendations for Continuing Professional Development

It is clear that even though tutors claim to have the pedagogical knowledge and that they do apply more well-known learner-centred methods and techniques in their teaching practice, it is still recommended to engage these tutors in professional development on LCP and especially in reflective practice. The findings show that there is a significant proportion of tutors that does not engage regularly in professional development in general and cooperation and sharing amongst peers in particular. To bring their pedagogical knowledge further into practice, and to transform their teaching practice by application of innovative approaches to teaching and learning, a more profound insight in the foundations of LCP and a hands-on training on methods and techniques such as problem-based and project-based learning, field work or techniques such as brainstorming and shared writing is recommended.

Professional development on LCP should not stop after an input session on LCP. It is recommended to engage tutors in follow-up practice, in which they apply what they have learnt in their own practice and share with their colleagues and peers. Additional trainings, dissemination workshops and lesson observations are obvious channels for cooperation and sharing knowledge and experience among tutors. Many researcher and educationalists (e.g. Cambridge, Kaplan, & Suter, 2005) argue that participation in communities of practice stimulates learning by serving as a vehicle for authentic communication, mentoring, coaching, and self-reflection on individuals' actions.

Finally, it is obvious that tutors should have access to relevant and sufficient LCP resources. Apart from providing and compiling a basic set of training and self-study materials, tutors can be engaged in the development of such resources themselves and in sharing these resources in libraries and open resource centres in the TTCs. Engaging students in the use of ICT and the use of ICT to support student learning also contributes significantly to the uptake of LCP. Even though access to ICT and LCP resources in general is limited, it is recommended to address the use of ICT and the full use of available resources in a professional development programme on LCP.

By engaging tutors in the TTCs in LCP, the professional development programme will contribute to shaping student teachers' identity that fosters learner centeredness in their future profession, at primary school level. In addition, the initial teacher training curriculum and assessment should also focus on promotion of reflective practice, reflecting current theories and approaches of learning.

This study is largely based on tutors' self-reported attitudes, knowledge, skills and practice related to LCP. It is important to note that there are obvious limitations to a self-assessment as it is clear that such assessments often lead to social desirability and overestimation. Nevertheless, the analysis of the data does show interesting trends and correlations between the different factors that have been assessed. It is clear that this data has to be complemented with more qualitative interview data, classroom observations and assessment of teaching practice.

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