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Strategizing Learner Support to Scaffold Learning and Internal Efficiency in Distance Training Program for In-Service Secondary School Teachers in Rwanda

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ABSTRACT

While distance training program (DTP) was adopted to increase the rate of qualified in-service teachers in Rwandan secondary schools and upgrade their pedagogical skills, ensuring adequate learner support under this program has remained cumbersome. This paper was an attempt to explore the provision of learner support in DTP and examine how learner support can be strategized to scaffold learning and internal efficiency. The study was conducted in the academic year 2015/2016 and adopted the explanatory sequential mixed-method research design. From a target population of 1,346, stratified random and purposive sampling techniques enabled to arrive a sample 315 respondents. The findings revealed that DTP students lack adequate exposure to learning resources. The schedule of DTP activities is volatile; the staff required to assist students are either insufficient or not recruited in good time. Also, the management of DTP is obstructed by the lack of fully-owned study centers. Hence, in view of the fact that learner support is a contributing factor towards effective learning and holds a statistically positive relationship with internal efficiency, the present study suggests that the highlighted weaknesses in DTP learner support be urgently fixed. In this vein, the management of DTP is recommended to revamp its learner support system by increasing students' access to enough and varied learning resources, hiring and training personnel in charge of students' support, and establishing fully owned and equipped study centers across the country.

Keywords: distance education, learner support, scaffolding learning, internal efficiency, Rwanda

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INTRODUCTION

Background

After the 1994 genocide perpetrated against Tutsis, Rwanda suffered from severe deficiencies in trained human capital (Musobo & Gaga, 2012). Given the lacune of teacher qualification in developing countries such as Rwanda, the Government has initiated a distance training program (DTP) to increase in-service secondary school teachers and upgrade their qualifications (Mukamusoni, 2006; Ndayambaje et al., 2013). The United Kingdom's Department for International Development helped launching DTP in 2000 (KIE, 2003). As of 2006, the program was handed over to the former Kigali Institute of Education (KIE), making it a dual-mode higher learning institution for teacher training (Mukamusoni, 2006). With the merging of the former public higher learning institutions into the University of Rwanda, KIE became the University of Rwanda-College of Education (UR-CE), keeping teacher training mandatory. DTP enrolments take place once every two years. Students are expected to move at the same pace to complete a diploma in education program in three years. DTP basically uses printed modules and these modules are distributed to individual trainees (students or teachers in service) as a package according to area one is specializing in. It was organized into two levels as academic pathways grouped into nine combinations (UR-CE, 2016).

Previous studies in the context of Rwanda have indicated some gaps in the DTP. For instance, Mukamusoni (2006) conducted a descriptive qualitative case study and demonstrated that traditional pre-service programs were prioritized at the expense of DTP. Ndayambaje et al.'s (2013) study focused on the operational framework of DTP and highlighted a strong need to upgrade DTP services and delivery modes. Furthermore, Umumararungu's (2014) findings revealed poor students' performance in DTP, while Hafashimana (2015) pointed out a high dropout rate whereby, since 2010, more than half of the enrolled students dropped DTP before completion. Ndayambaje (2016) reported that the calendar of activities under DTP was hardly respected, whereas KIE (2012) indicated that many students failed to graduate in time. Though issues rose on DTP for in-service secondary school teachers are

connected to learner support, none of these research studies conducted in Rwanda focuses on learner support. Therefore, this paper is an attempt to explore the provision of learner support in DTP and examine how learner support can be strategized to scaffold learning and internal efficiency.

Literature Review

Learner support in a context

The nature of distance education requires robust learner support services to maximize learner retention, success, and self-realization (Ryan, 2008). Though technologies have allowed online video or audio interaction, distance education learners seem to be isolated from a real-life context that can be conveyed through face-to-face learning practices. Thus, Ryan (2008) asserts that learner support includes administrative and technical systems' support, print and digital learning resources, library assistance, career guidance and counseling, synchronous and asynchronous online interaction between learners and teachers and learners. Administrative, instructional, technical, counseling, and tutorial supports are five key components of supports suggested by Keast (1997).

Potter (1998) proposes a model that may allow distance learning institutions to plan and offer required support according to the learner lifecycle framework. Consequently, a learner lifecycle integrates specific learner support services. For example, the system provides information concerning the possibility offered by distance learning for an individual learner, authorized distance learning institutions and programs, "can I do it?" questions, advisors' and potential teachers' contacts. Once learners are admitted to a distance learning program, they get information and support regarding enrolment, payments, requirements, and instructions about equipment and software, study skills tips, and helpdesk. In a study program, learners are supported to interact with the teacher and peers through email, chats, forums, and bulletin boards. They get also support on how to access digital resources. Learner support services related to other types of assistance on handling assignments results/feedback, revisions, and exams, re-enrolments, graduation, and alumni details (Potter, 1998).

Tait (2003) illustrated some components of the learner support system at the Open University United Kingdom (OU UK) in 1998–each learner had a personal tutor. One tutor was responsible for no more than 25 learners. The tutor's role was to support learners in learning, teach them, monitor their progress, and mark their work. Besides, all undergraduate learners were assigned a personal tutor-counselor to advise them on their university career path. Learners could attend limited face-to-face tutorials if needed, but they were not obliged to do so. The OU UK had created a number of study and regional centres across England in order to bring the university to the learner proximity. The contact hours were offered to learners in these centres. Tutors were at the heart of a learner support system at the OU UK.

Learner support at the service of scaffolding student learning

George and Frank (2008) argue that one of the key services that determine learners' success in their academic careers, especially those registered in distance learning programs, is information literacy competencies. In fact, Kuh and Gonyea's (2003) findings reveal that information literacy improves learning achievements and raises learners' ability to think analytically. In other words, learners need guidance and skills to identify, assess, retrieve, and effectively use digital resources (George & Frank, 2008). This requires librarians to be prepared to provide distance learners with research skills and help them utilize proper citations and avoid plagiarism, among other things. George and Frank (2008) underpin that self-paced learning tools, online research, and writing skills tutorials can support distance learners in requesting for and accessing online library services.

Naidu (2008) contends that several technologies enable distance learners to access content and improve interaction. However, the author affirms that some technologies lack scaffolding cues for learners' support. Therefore, instructional design is considered as a fundamental cognitive strategy to bring about effective and efficient learner support in a distance learning environment. Naidu (2008) defines "learning scaffold" as supporting mechanisms "put in place to guide student learning in desirable directions or to enable the development of desirable cognitive skills in learners" (p. 109). Putting this differently, scaffolding learning implies committed and skilled personnel, including course designers, mentors, and tutors or facilitators to make distance learning meaningful, encouraging and effective. Design-based learning, critical-based learning, problem-based learning, and story-centered learning are cognitive scaffolding strategies suggested by Naidu (2008) that can be developed through collaborative learning, critical reflection, creativity, problem-solving, and learning by doing in an online supported distance learning environment. Blackmum and Thibodeau (2008) report that online group work may encourage experienced learners to support novice learners in developing a learning community.

New technologies have increasingly allowed self-directed learner support. In this connection, Walti (2008) recommends using learning journals and web-based portfolios to guide learner reflections on their learning practice and outcomes. Walti (2008) ascertains that these journals and portfolios support consistency, encourage demonstration of learning outcomes, decrease anxiety and boost learners' confidence.

The literature review reveals that, firstly, learner support seems to be bound to the context given that it refers to a particular educational system and specific groups of learners. Hence, learner support aspects vary according to institutions. Secondly, previous studies have mainly concentrated on outlining learner support components with little empirical evidence on how it is conducted. Distance learners' and tutors' voices are rarely heard. The present study attempts to address this gap regarding an empirical inquiry, especially in the context of Rwanda, whereby the DTP was designed to respond to the large problem of shortage of teachers countrywide and address a specific problem of unqualified in-service secondary school teachers in pedagogy.

Learner support as a contributing factor to internal efficiency of a distance education program

According to Baruah (2011), learner support in distance education is meant to uphold internal efficiency. Core efficiency is a measure of scholarly output and outcome (Cornali, 2012; Gil, 2014; UNESCO, 2002). It is a diagnostic tool that illuminates strengths, weaknesses, leaks and the achievement of the goals set based on the input-output ratio (Akinsolu, 2012; Yunas, 2014). In the context of this research, internal efficiency delimited to educational outputs as articulated by the measureable evolution and flow rates of the students (Hussain & Saeed, 2012). The three indicators of internal efficiency that were considered are promotion, repetition, and dropout rates (UNESCO, 2014). In the present study, internal efficiency entails the educational institution's efforts to reach and maintain an upward advancement rate and restraint the repetition and dropout rates.

Table 1. Sample size

SN	Category	Total population	Sample size	Percentage of the sample vis-à-vis the target population
1	Level II DTP students	1090	251	23.03
2	Management of SODeL	2	2	100
3	SODEL administrative staff	9	2	22.22
4	UR-CE academic staff	181	42	23.2
5	Management of UR-CE	1	1	100
6	DTP regional coordinators	4	4	100
7	Heads of provincial DTP study centres	6	1	16.66
8	DTP tutors	53	12	22.64
Total		**1,346**	**315**	**23.4**

METHODOLOGY

This study adopted the explanatory sequential mixed method research design (Creswell, 2012, 2013; Creswell & Clark, 2011). Quantitative data comprised secondary data (in case of documenting promotion, repetition, and dropout rates of DTP students) and primary data collected using learner support questionnaires, whereas qualitative data were collected using observation checklists and interviews. The study was carried out at UR-CE (2015) during 2015/2016. The target population was composed of 1346 people. We used two sampling techniques–purposive and stratified random sampling (Orodho, 2009)–to carry out this study. We purposively sampled seven participants from the target population. These participants are one member of the management of UR-CE, four are regional coordinators, and two are in management of SODeL. Purposive sampling was used because of a non-probability sampling technique. In addition, the researchers had identified for these categories of respondents as resource respondents to the study (Bamberger, 2012). Thus, questioning as key DTP leaders helped researchers achieve their research goals by providing explanations of the level of student support that emerged under the DTP.

Stratified random sampling helped us to select the respondents from the target population's left over groups. It entailed 1339 individuals surrounding 1,090 DTP student-teachers, nine SODeL administrative staff, six provincial heads of study centres, 181 UR-CE academic staff, and 53 DTP tutors.

We determined the sample size (**Table 1**) by applying Slovin's formula $n=N/(1+Ne^2)$ under the stratified random sampling technique (Amin, 2005), where, 'n' is the sample, 'N' is the population while 'e' is confidence level or alpha significance. Since this formula provides a definite size of the sample (Amin, 2005), it was chosen among other formulae.

In this study, the instruments' content validity was ascertained by experienced scholars, and the pilot of the instruments was done in one DTP study center. Quantitative data were analyzed using descriptive statistics where the mean scores and standard deviations (SDs) were computed and inferential statistics such as regression analysis (Gay et al., 2006). Qualitative data were analyzed thematically and by a quick, impressive summary (Orodho, 2017; Orodho et al., 2016; Thomas & Harden, 2007). Key quotes from interviews have been inserted in this paper to substantiate and illustrate the findings. Ethical aspects such as anonymity, informed consent, and voluntary participation (Creswell, 2013; Sammons, 2005) were assured. The discussion of the findings was informed by the literature review and researchers' knowledge of distance education.

The authors of this study recognize a limitation to the study linked with the use of a questionnaire to DTP students. In effect, a focus group discussion with selected DTP students would have shade more links into personal learning experiences that can be connected to internal efficiency.

FINDINGS

The State of Learner Support and Learning Under DTP

The data collected utilizing learner support questionnaires addressed to students (N=251) indicated that DTP students do not receive adequate exposure to learning resources. In this vein, students' respondents argued that they do not receive modules in time (mean=1.94, SD=1.14), do not get easy access to the library easily (mean=1.89, SD=1.18), and are not allowed to practice in science laboratory (mean=1.18, SD=1.12). The investigated students also confirmed that they neither access the computer lab (mean=2.01, SD=1.25) nor get additional materials to the printed modules (mean=2.29, SD=1.17). The same students indicated that they do not have access to existing electronic resources (mean=2.36, SD=1.19) and claimed not to be trained in the use of the internet to learn (mean=2.46, SD=1.37). The shortage of learning resources in DTP was also underlined by the investigated staff (N=51), who asserted that teaching and learning resources in study centers are very few (mean=2.80, SD=1.15). The observation checklist has been another tool that confirmed that the major learning resource used by DTP students is the print module. Internet and well-equipped science labs are almost inexistent, and computer labs are not fully free for students' use. Given these challenges, interviews were organized to probe further. On the issue of the dominance print modules, the interviewee from the management of the School of Open and Distance Learning coded R5LSI (2016), indicated that

> "… due to the limited financial assistance to modernize DTP mode of delivery, the print modules have actually remained the only learning tool that can guarantee that our students have received basic learning resources…" (R5LSI, 2016).

Regarding the learner support, the present study explored how students benefit from human support as provided through different sessions like face-to-face sessions and weekend tutorials. The investigated staff (N=51) communicated that generally, DTP students actively participate in tutorials of weekend (mean=3.43, SD=0.83) and arrive in time during face-to-face sessions (mean=3.52, SD=0.66). Nonetheless, this staff has shown that students' overall attendance during weekend tutorials (mean=3.39, SD=0.91) is not satisfactory. As

per information collected from the surveyed DTP students (N=251), the root cause of DTP students' poor attendance may be connected to the complaint that schedules for weekend tutorials are not stable (mean=2.53, SD=1.28). The analysis of the surveyed staff's demographic information also provides a hint into the loophole in human support. Though most staff we surveyed (76.6%) already worked with DTP for four years and more, where about 45.10% (half of them) were never trained through distance education.

Additionally, in comparison, out of the three groups of staff, 66.67% of untrained staff were new DTPs, but DTP tutors were responsible for the academic support of DTP students on a day-to-day basis. Another source of qualitative information on human support was the observation checklist. Using this tool, the researchers found that some of the proposed modules did not have DTP instructors. Indeed, the DTP study centers were poorly staffed, with only one permanent staff appointed as regional coordinator in the regional center, while the provincial study centers did not have permanent staff to perform DTP functions. Through the interview, researchers followed up on the issue of students' poor attendance during weekend tutorials. The informant R1LSI (2016) who is a regional coordinator, argued that

> "… our students are secondary school teachers with meager salary … In order to cut costs, many of them do not arrive in the neighborhood of the study centers by Friday to get prepared for weekend tutorials… Most of them travel on Saturday morning and then arrive late… Others hardly even manage the expenses of two days … That is even why Sunday's attendance is very poor compared to the one of Saturday… You understand that it is more difficult when it is time due for residential face-to-face than the last one to two weeks…" (R1LSI, 2016).

On the issue of the absence of tutors in some subjects, this is how one of the interviewees, R7LSI (2016), who is also a manager in the School of Open and Distance Learning, explained the scenario that

> "…some tutors in some subjects have not been there for the last two months … Some resigned while many others were stopped because of a new University of Rwanda (UR) policy to cancel all kinds of double employments within the university. In fact, we used to have some UR administrative, and academic staff contracted as tutors… So far, we have advertised, selected, and forwarded files of fresh tutors to fill vacancies… We are still waiting for UR headquarters' reply on those appointments' requests…" (R7LSI, 2016).

The third broad area of investigation of learner support under the DTP focused on the program's managerial or system support component. The investigated DTP students (N=251) disagreed with some major vital components of the system support in distance education like regular communication (mean=2.58, SD=1.26) and realistic time to get feedback on appeals (mean=2.55, SD=1.28). The problem related to communication and service deliveries was also confirmed by the observation list, according to which the service agreement, operating schedules and services offered in these study centers were not publicly announced. Also, none of the research centers were able to display a website, a Facebook or Twitter account, or a resource to disseminate information to the general public. Investigators also found that the office's landlines only work in Kigali. No regional or provincial study center had signposts on the main roads for visitors or new students seeking information or services from these DTP centers. Through the interview, the researcher could dig further into some of these issues. In view of one interviewee, R3LSI (2016), a regional coordinator, most of the managerial issues under DTP are connected to the lack of fully owned premises. The interviewee explained that

> "… secondary schools host DTP study centers… As we speak, the administration of school X has denied any further DTP activity in their premises. Students in that center have to travel to other centers or wait for another alternative from the UR-CE…" (R3LSI, 2016).

The issue of late communication and abrupt changes were also connected to the lack of fully-owned study centres by the interviewee, R5LSI (2016), who is also a regional coordinator, stated that

> "… DTP study centres do not have their premises… So, depending on other activities within the hosting schools, we are sometimes relocated to other rooms or are categorically told to find where else to conduct our activities. That is how students are either late communicated or even come to know where DTP activities were shifted to, once already in Study Centres….it is not our fault… These are last-minute changes that we have to accommodate… That is how sometimes you will find us in neighboring primary or secondary schools..." (R5LSI, 2016).

The researchers were interested to know the sustainable solution to these problems. Because of the interviewee, R4LSI (2016), who is a senior manager at UR-CE, informed that

> "… there have been issues in renewing memorandum of understanding… But, that should not have been the reason to obstruct DTP activities in as far as we are all public education stakeholders of this nation… anyway… the sustainable solution is to shift all DTP study centres in UR campuses and colleges. UR-CE is one of the constituent colleges of UR, and this is part of the reason for UR establishment; resource consolidation and cost-effectiveness. Like that, we will run away from the rigidity of some partner secondary schools and thus improve DTP students learning experiences…" (R4LSI, 2016).

Effect of Learner Support on the Internal Efficiency of DTP

To analyze and have a clear picture of DTP's internal efficiency, the present study considered four consecutive academic years. **Figure 1** illustrates the trends.

The data presented in **Figure 1** shows that over the four academic years, the highest promotion rate was recorded in the 2011-2012 academic year (78.50%). The highest number of repeaters was recorded in 2013-2014, when the repetition rate was 32.63%. The share of those who dropped out in the 2014-2015 school year was highest, at 15.36%. Researchers continued to work to determine to what extent learner support affects internal efficiency. The social science statistics (SPSS) software package helped perform the multiple regression analysis shown in **Table 2**.

Model 1 in **Table 2** shows the effect of learner support on the promotion rate of DTP. Pearson's r=0.495 are shown to be moderately positive in terms of DTP relationship between learner support and the DTP promotion rate. The R square (R^2) of 0.245 suggested that learner

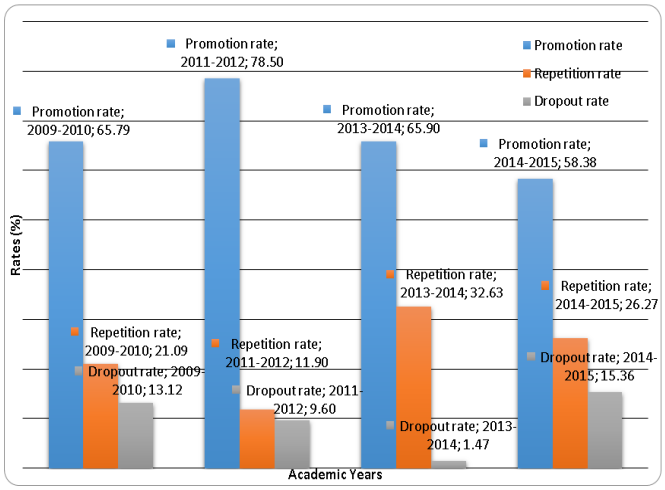

Figure 1. Internal efficiency of DTP across the academic years 2009-2010, 2011-2012, 2013-2014, and 2014-2015 (Source: Primary data)

support accounted for only yield of 24.5% of the changes in the promotion rate of DTP. The F-ratio's p-value indicated that the model was not statistically significant (p=0.357, F= 1.193).

Model 2 in **Table 2** shows the influence of learner support on the repetition rate of DTP. Pearson's r=0.407 indicated a moderate positive relationship between repetition rate of DTP and learner support. Though, the R^2 of 0.166 showed that only 16.6% of the DTP changes in repetition rate accounted by learner support. The F-ratio's p-value indicated that the model on the influence of student support on the repetition rate of DTP was not statistically significant (p=0.557, F=0.727).

Model 3 in **Table 2** describes the influence of student support on the dropout rate from DTP. Pearson's r=0.617 indicated a moderately positive relationship between student support and DTP dropout rate. The calculated the R^2 of 0.381 meant that the variability in the DTP dropout rate caused by student support was 38.1%. The F-ratio's p-value indicated that the model on the influence of learner support on dropout rate was not statistically significant (p=0.139, F=2.256).

DISCUSSION AND CONCLUSION

The present study's findings informed that DTP students do not have access to enough and varied learning resources. The major learning resource used by DTP students is the print module. Students do not receive an easy access to the library, Internet, science laboratories, or e-resources. This is happening, yet digital resources enhance learning (George & Frank, 2008) and enable distance learners to access content and improve interaction (Naidu, 2008). It was also found out that the person supposed to assist DTP students throughout the learning process is not only insufficient and inadequately trained, but also replacements for those who departed are not done in due time. This is a big compromise to the smooth running of a distance learning program because, as Keast (1997) posits, there is imperative to avail the personnel meant to provide the critical services like managerial, technical, instructional, and counseling or tutorial support.

DTP study centers were also found not to be wholly owned by the UR-CE, and this is bringing constant issues of volatility in the schedule of activities and collaboration with the hosting secondary schools. Beyond that, DTP is not using technologies and service charters that would enhance communication and service delivery. While so, there is a need to recognize that modernized distance education should use technology to encourage experienced learners to support novice learners in such a way they develop a learning community together (Blackmum & Thibodeau, 2008). Technology also guarantees effectiveness in essential services related to learner support (George & Frank, 2008) and prompts communication and feedback between students and the faculty (Potter, 1998).

This study's findings concur with Baruah (2011), who asserted that learner support in distance education is meant to uphold internal efficiency. In effect, learner support services maximize learner retention, success, and self-realization (Ryan, 2008). Therefore, the present study concludes that scaffolding learning and upholding internal efficiency under DTP can only be achieved if the highlighted hindrances to learner support are fixed.

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Declaration of interest: Authors declare no competing interest.

Data availability: Data generated or analysed during this study are available from the authors on request.

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Table 2. Multiple regression analysis models of the influence of learner support on internal efficiency of DTP

	Coefficients	Model 1: Promotion rate	Model 2: Repetition rate	Model 3: Dropout rate
Predictor: Learner support	R	0.495	0.407	0.617
	R^2	0.245	0.166	0.381
	p	0.357	0.557	0.139
	F	1.193	0.727	2.256

Note. Significance level (p)<0.05

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