

## **An Evaluation of Teaching and Learning strategies used in remedial teaching and learning of Biology in Rwanda's lower Secondary Schools**

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### **Abstract**

COVID 19 has impacted every aspect of human life. In the education sector, schools were shut down and some used radios, TV, and e-learning to continue their studies. However, some students were not able to access all the listed platforms and consequently, they were at the risk of dropping out or repeating. To tackle this challenge, Rwanda Education Board proposed remedial teaching as a strategy to tackle the problem once school was reopened. Since school reopening the strategy was implemented but there is a need to understand how it is being implemented. It is that perspective that this study was conceived to investigate how remedial teaching and learning are implemented in Rwanda's Ordinary level secondary schools in biology subjects. The research used a qualitative approach. Using purposive sampling eighteen schools from different districts were selected in which an observation was made using an observation checklist. Five students and one biology teacher were interviewed at each school using an interview schedule to complement observational data. The results show that remedial teaching is implemented in the mornings before normal class where group work is the main strategy used in remedial teaching. However, teachers try to teach at the right level, still when it comes to assessment some never assess students while others do not consider the level of students during an assessment. One of the challenges still hampering the implementation of remedial teaching includes the low level of students' English, and the short time devoted to remedial teaching while some teachers still see it as a time-consuming process. Increasing time devoted to remedial teaching, and the creation of Continuous Professional Development courses for teachers would improve the current situation.

Keywords remedial teaching; secondary schools; ordinary level biology

### **Introduction**

Remedial teaching is an intervention program where a child receives each diagnosis and treatment till the achievement of productive recovery (Huang, 2010). This means that remedial education is an essential curative measure where learners attain critical knowledge and skills. Once learners with low mental ability (late learners) fail to receive remedial lessons, they would gradually leave

schooling ahead of finishing the compulsory education in the official school program (Oyekan, 2013). This implies that the late learners require some form of motivation for them to improve their grades to be on par with their peers in other learning institutions. Remedial teaching is a modern way of teaching students with low learning abilities to fill the gaps in their learning so that they improve their performance (Melton, 2010). This means that remedial education is an

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essential curative measure where learners attain critical knowledge and skills. Therefore, the students who failed to perform as their peers in regular class need remedial class for special help because remediation work is a form of collaboration and supportive learning between students and teachers to provide the individual differences among the students and help the students who are lagging (Chitsa, 2017). Such a remedial program reduces the rate of dropout in schools, trains the students to be competent on market, and develops a country (Eric, 2014). It enables the learners to acquire the self-confidence to face their weaknesses and overcome them via the acquisition of self-help strategies. moreover, remedial teaching increases the knowledge, skills, and attitude of the students at the school as well as their everyday 'activities (Kasran,2012).

The remedial classes are successful and require to use of different models include: paired-course models, extended instructional time models, accelerated learning program models as well as technology-mediated support models (Daugherty, 2018). The choice of models to use is based on the needs or difficulties of the learners in courses. For instance, some low-achieving schools decide to extend the time of starting or ending the terms for increasing the learning period and the performance of the student while other schools organize the coaching for the low-achieving students according to their difficulties in learning (McMurrer, 2015). In addition, the curriculum to be used in remedial class must be the same as the curriculum taught in a regular class. Teachers are advised to use small-sized classes to allow them to provide adequate help to learners in remediation (Ganyaupfu, 2013).

The implementation of remedial teaching is built on the poor performance of the students is attributed to many factors including

inappropriate methodology applied in the teaching process, inadequate textbooks to be used by the teachers and learners, lack of biology laboratories for the practical experiment, deficiency of fieldwork and language barriers (Lebata, 2014). Moreover, the shortage of the infrastructure, teachers' motivation, students' attitudes, methodology applied in teaching, learning environment, teachers' experiences, and inappropriate teachers' qualifications were pointed out to be among the causes of the poor students 'performance in secondary schools (Sureka, 2017).

In Ghana, high attendance levels of the students in class have not yet led to high levels of academic achievement and less than half of 8- to 9-year olds can perform simple tasks in reading, writing, and arithmetic (Ghana Education Service, 2012). So, they chose to implement remedial teaching for providing high performance for the students and supporting their success during the examination (Oduro-Ofori, 2014). In Zimbabwe, Remedial teaching was taken as the technique and practice to eliminate weaknesses that the slow learner is known to have (Benny, 2016). In Rwanda, it mentioned that remedial teaching involved bringing back the dropout students into formal education (Kanamugire, 2008). While In 2020, The Rwanda Education Board (REB) recently identified remedial teaching as one of the ways to upgrade the quality of education and prevent the students who were lagging to drop out due to the long period, they spent at home during a lockdown of covid-19 (REB, 2020).

**Statement of the research problem and motivation**

The students have different levels of learning, some can learn in a fast-paced manner while other students need more time to reach the level of their peers. Therefore, these students

with limited learning abilities need special care (Othman, 2016). In addition, ensuring the improvements in the quality of education for all sometimes requires introducing a new program that will bring creativity and innovation (OECD, 2012).

Some programs including CBC have been introduced in Rwandan schools for improving the quality of teaching and learning as the students were not equipped with the employable skills, attitudes, and values. (REB, 2015) but Its implementation was hampered by the absence of proper monitoring and COVID 19 which created a learning crisis with the closure of the schools during the 1st term of the 2020-2021 school year.

As the schools reopened, some students were at risk of repetition and dropout. As a solution, the Rwanda Education Board (REB) adopted remedial teaching to support those students to enhance their performance (REB, 2020). By now, the implementation of remedial teaching needs to be monitored and reinforced so that it may not fail like other programs that did not meet their objectives in the development of Rwandan education due to it has various challenges as it is still new in Rwandan education (Serdyukov, 2017). The research explored the extent to which this program is implemented in some schools in Rwanda, especially in ordinary level biology courses. The implementation of remedial teaching was assessed by exploring the ways the remedial strategies are put into practice and examining the supporters and the barriers to remedial teaching and learning of biology in Rwanda in Rwanda ordinary level secondary schools.

### **Purpose, Objectives and Research Questions**

The purpose of this study is to investigate how remedial teaching and learning are implemented in Rwanda's Ordinary level secondary schools in biology. In order to achieve the purpose, the following specific objectives were formulated:

1. Explore strategies/activities employed by biology teachers in remedial teaching
2. Investigate the extent to which remedial teaching strategies employed by biology teachers agree with those suggested by REB
3. Examine the promoters and the impediments of remedial teaching and learning of biology in Rwanda secondary schools.
4. Identify the advantages of remedial teaching from students' perspectives

The study was guided by the following research questions:

1. Which strategies/activities are employed by biology teachers in remedial teaching?
2. Which factors promote, and which factors inhibit, the enactment of remedial teaching and learning of biology in Rwanda secondary schools?
3. What are the advantages of remedial teaching from students' perspectives?

### **Research Methodology**

The qualitative approach is acceptable in a wide range of advanced educational research (Doyle, 2009). The data was collected using an interview and observation guides. The research was conducted in ordinary level secondary schools from districts of Rwanda which were trained on remedial teaching to help the students with learning difficulties by VVOB (Vlaamse Vereniging voor Ontwikkelingssamenwerking en Technische Bijstand). It was conducted in three districts of Rwanda from those which were trained by VVOB (Kayonza, Rwamagana, and Kamonyi). These districts were conveniently selected while schools were selected purposively. By using this technique, in each district, the researcher selected six schools from excellent schools, nine years basic education, or twelve years of basic education

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including both public and government-aided schools from both rural and urban schools to ensure the reliability of the research. To collect all necessary data in this research, the researcher used interviews and classroom observations. The interview explored the promoters and the impediments of remedial teaching and learning of biology in Rwanda secondary schools and were open-ended questions. They are used to investigate the teaching strategies used in remedial teaching and explore how the remedial strategies are implemented or are enacted in Rwanda's lower secondary schools. While classroom Observation was conducted to investigate teaching, strategies used in remedial teaching and learning of biology in Rwanda's lower secondary schools and explore how the remedial strategies are implemented in the teaching and learning of biology. For analyzing the strategies used in remedial teaching and learning of biology in Rwanda's lower secondary schools, the researcher used a tabulation. (Jung, 2019). Thematic analysis of interview data was employed while descriptive statistics such as percentages were used to analyze and present observational data. All data were tabularly presented and NVIVO software was used to carry out this analysis.

## **Results**

This section presents the study findings. These findings are based on the following variables: teaching strategies used in the remedial program challenges hampering remedial program and suggestions to improve the remedial program in secondary schools.

The findings are presented as frequencies and percentages in the tables. For analytical statistics, the frequency of similarities was used where appropriate.

### *Strategies/activities employed by biology teachers and students in remedial classes*

The following three themes emerged in summarising the strategies/activities employed by biology teachers and students in the selected secondary schools - forms of support to struggling students; learning activities students were involved in; and assessment strategies employed. Table 1 shows the number of teachers indicating that the teaching strategies or activities described in statements under each of the three themes were employed in his/her class. According to data presented in Table 1, it is clear that teachers use group work to provide extra learning activities and exercises during the remedial program to support struggling students. Another support provided is giving special attention to struggling students. On the side of how students are involved in learning activities during remedial class, it is shown that most students participate in question-answer sessions and also in group work. Additionally, students participate also in doing exercises provided as well as Participation in group work presentations. It is evident that when it comes to assessment, some teachers do not assess student progress during remedial classes. While other teachers reported that they do ask questions related to the content covered and use regular tests as an assessment during remedial programs.

**Table 1** Number of teachers indicating they employed various remedial teaching strategies/activities

Remedial teaching strategies/activities identified under the themes	Number of teachers
<i>Theme 1: Forms of support to struggling students</i>	
a) Encourage low achievers to seek help from high achievers	1
b) Stress on their attentiveness during class	2
c) Providing extra learning activities/exercises	12
d) Providing special attention to struggling students	4
e) Figuring out the causes of their failure	2
<i>Theme 2: Learning activities students were involved in</i>	
a) A short lecture and group work	1
b) Active participation in the questions-answers session	18
c) Participation in group work discussion and presentations	25
d) Do exercises	6
e) Taking notes	4
f) High achievers explain the content to their struggling colleagues	13
<i>Theme 3: Assessment strategies employed</i>	
a) Every student is assessed at his/her level	13
b) The teacher asks questions related to the content covered	15
c) Teachers never consider students' levels while assessing students	8
d) Regular tests are used as an assessment	5

**Table 2** Number of teachers and students identifying statements as promoters of remedial teaching and learning

Statements about promoters of remedial teaching and learning	Number of teachers
<i>Teachers' responses</i>	
a. Self-motivation and passion for the teaching profession	17
b. To improve learners' performance	11
c. Availability of teaching aids	3
<i>Responses Students' response</i>	
a. Time for revision	11
b. Freedom to ask questions	13
c. Opportunity to revise what learned previously	13
d. The teacher provides an extra explanation of what learned	12
e. More motivation to study	2

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*Factors identified to promote, and those identified to inhibit, the enactment of remedial teaching and learning of biology in Rwanda secondary schools*

To examine the factors that promote and those that are impediments the implementation of remedial teaching and learning of biology in Rwanda secondary schools, biology teachers and students were interviewed. Table 2 shows

One of the challenges reported by both teachers and students in the short time devoted to remedial classes, in addition to language barriers and students, lack of motivation to attend remedial classes. The scarcity of resources and over clouded classrooms also hamper the proper implementation of the remedial program. Results from this interview are presented in Table 3.

**Table 3**      **Number of teachers and students identifying statements as impediments of remedial teaching and learning**

Statements about impediments to remedial teaching and learning	Number of teachers and students
<i>Learners</i>	
a. They are late	3
b. Lack of motivation to attend remedial classes	18
c. Language barriers	13
d. Some continue to fail	2
<i>Physical resources</i>	
a. Scarcity of resources	3
b. They are available but not enough	5
c. Overloaded classroom	4
<i>School administration</i>	
a. School not providing enough time for remedial classes	3
b. The immensity of the curriculum	2
c. Overloaded the timetable	2

the number of biology teachers and students who accepted certain statements about promoters of remedial teaching and learning during the interviews.

Interview data presented in Table 2 shows that self-motivation and passion for the teaching profession is the main promoter enabling teachers to adopt remedial programs while the availability of teaching aids also being one of the promoters. On the students' side, freedom to ask questions as well as the remedial class being the opportunity for them to revise what learned previously play a major role in attending remedial classes.

*Suggestions to mitigate the challenges*

Both teachers and students were interviewed to provide suggestions that can improve the current situation regarding remedial classes. Amongst them, as presented in Table 4, include: encouraging students to come early, and use English which is not complicated providing Continuous Professional Development (CPDs) specifically designed for a remedial program. Teachers wished that school administrators may increase the time devoted to the remedial program and provide remedial class compensation to teachers. Students were interviewed to identify the

**Table 4** Number of teachers expressing opinion to mitigate the impediments of remedial teaching and learning

Statement	Number of teachers
a. Encouraging students to come early	14
b. Creation of English clubs	5
c. Use mother tongue or easy English	11
d. Provision of more desks	5
e. Increase the classroom	4
f. Preparing CPDs specifically for a remedial program	14
g. Providing remedial class compensation to teachers	3
h. Increasing time for remedial class	15

**Table 5** Advantages of the remedial program from students' perspectives

Advantages	Number of students
a. Opportunity to ask questions and receive explanations from peers	19
b. Increase students' confidence and self-esteem	10
c. Peer to peer learning	14
d. Help to revise what learned previously	4
e. The teacher repeats the lesson to help struggling students	5
f. Remedial programs help to improve students' academic performance	7
g. Promotion of social interaction amongst students	2

advantages of the remedial program in biology teaching and the learning process. Results are shown in Table 5. The results show the advantages of remedial classes according to students' views. The respondents see the remedial class as an opportunity to ask questions and receive explanations from peers, while others reported that remedial classes increase students' self-belief and confidence. During the remedial teaching, the teacher gets the opportunity to revise what was learned previously hence enhancing students' understanding of the content being taught. Therefore, it can be said that remedial teaching is important to both teachers and students.

### Discussion of major findings

Group work formed by mixing high achieving students with lower achievers is the most used teaching strategy in remedial classes. During group work, findings in this research show that students actively participate in question-answer sessions and learn from peers. This is not a surprise Group work has become an essential part of modern methodology in teaching and learning because it offers teachers a powerful way to engage students and provides students with opportunities for cooperative learning. (Jr, 2021). Since humans are social being working in groups promote social togetherness (Dhawan, 2015). Working in a group aims to strengthen human capacities which include the capability to

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overcome frustration healthily and optimistically, to cooperate, to make decisions, and to achieve kinds of value individually through group participation. Even though group work is widely used as a teaching strategy, most teachers reported that when it comes to assessment, they rarely consider the level of students, lack of time being the main reason behind it. It is however advised that teachers of remediation need to motivate, critique, challenge and advise their learners, applying teaching and contextual expertise in a constructivist, student-centered environment that fosters curiosity and joy for learning( Samikwo, 2013).

REB proposed also other strategies than group work such as roleplay-based learning. But results from this study show that role play based is rarely used, with the short time devoted to remedial class and being naturally time-consuming the main reason behind the decision not to use role play-based learning. This is not surprising, as it is suggested that during remedial education, a teacher may select teaching methods that are outside the norm of general classroom techniques as long as the selected strategies target the identified learners' difficulties. Selecting group work as a remedial strategy, therefore, is correct. However, the question remains whether they are effective and meet the reason for creating remedial education. For that reason, further research on the effectiveness of group work in remedial education is needed to answer this uncertainty.

It was again suggested by REB that during remedial teaching teachers should emphasize the teaching at the right level technique. Observational data showed that teachers try to use this technique they do by knowing the level of students either from assessments or from class observation as reported in this study. This implies that if teachers do these students will perform better as the literature

reveals. There is a strong need to know if teaching at the right level during remedial teaching and learning will help studying learners to achieve better than before remedial.

Results also show that universal learning design where inclusiveness is widely used by teachers interviewed in this study. The results showed that almost all teachers pay attention to students by considering learners' disabilities and their ability and difficulties in learning. Furthermore, the findings showed that teachers allow students express their knowledge freely and easily.

### **Conclusion and Recommendations**

The purpose of this study was to investigate how remedial teaching and learning are implemented in Rwanda's Ordinary level secondary schools in biology subjects.

The study findings showed group work and teaching at the right level were the most used teaching and learning strategies used in the remedial education program.

During remedial education, teachers use group work to provide extra learning activities and exercises to support struggling students. The students are involved in learning activities during remedial class, by participating in question-answer sessions and group work presentations. When it comes to assessment, most teachers do not assess student progress during remedial classes. Short time devoted to remedial classes along with language barriers is the most challenge hindering the implementation of remedial classes. Increasing time devoted to remedial classes and providing CPD training to teachers will enhance the program.

Based on the study findings it can be recommended that:

- School administrators and policymakers should provide (or design) a CPD course



for teachers to help teachers to be acquainted with the proposed teaching strategies for remedial education

- Increasing time devoted to remedial classes will help learners to benefit more from this program.
- Further research is needed to explore the efficacy of this program
- Teachers are requested to motivate their students to attend the remedial class and come on the time since the program is designed for them.
- Proper measures like supervision from school leaders are needed to make it more serious like other school activities.

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