Motivation Level of ODL Students based on Keller's ARCS Model: A Case of Dual Mode University in West Bengal, India

ABSTRACT

Aims: This research seeks to explore higher education students' motivation level under the ODL mode of study and compare the motivation level with respect to gender based on Keller's ARCS model.

Place and Duration of Study: The study was conducted among the higher education students who enrolled in different ODL programs under the dual-mode University in West Bengal. Survey was administered for two weeks during Personal Contact Programme (PCP) for the academic session of 2023-2024.

Methodology: The present research used a quantitative research method. We used the IMMS questionnaire based on the Kellers ARCS model. There are 36 items and 4 dimensions in the IMMS. On the standardized Cronbach Alpha, the overall reliability of all the scales was 0.92. The level of motivation was then assessed using some basic statistics.

Results: The minimum and maximum overall motivation levels among the 77 ODL students were 2.83 and 4.97, respectively. The overall motivation levels mean score was 4.32, meaning it is very positive. Depending on independent t-test result, no significant difference was found in motivation levels among ODL students related to gender. ARCS model indicates that the motivation level of students under ODL mode of study is in a high category range (4.00-5.00) with an average value of 4.32.

Conclusion: The success and effectiveness of the ODL system largely depends on self-learning materials.The learning material in open and distance learning should promote autonomy, motivation, and self-regulated learning while fostering a sense of community and belonging despite physical separation.It is recommended that the ODL professionals should offer more engaging teaching-learning environment that increases ODL students' competence, giving ODL students more opportunities to learn independently, and involve them in planning learning activities that might enhance their motivation level.

Keywords: Motivation Level; ODL Students;Higher Education; Dual-Mode University.

1. INTRODUCTION

The motivation of students to participate in educational activities is important [1]. Motivation is very significant and highly influential factor of learning behaviours. It is an orientation for learning. It will thus have an impact on whether a student will give up or go forward, and how attentive he will be in his reflection on his learning [2]. It is important in determining the extent to which students will learn from the activities they undertake as well as their knowledge about them. Students who are motivated to learn apply higher cognitive processes in their learning. Motivation is an important aspect that contributes to defining learning outcomes [3]. Motivation improves the speed of work that a student is required to do

in order to achieve a goal [1]. It is important to learn the motivation of students in education. A learner learns best when he/she recognizes the need and develops his or her own interest in learning. Motivation encourages learners to focus, think critically, and learn efficiently. A learner who loses motivation finds it difficult to learn because they do not believe that there is anything to learn. Motivation gives the drive and effort to the student, needed to complete the task or a programme of study. It helps the learner to adopt the right state of mind for learning. It focuses a person's attention and energy towards the activity or the subject matter they want to learn. The motivation encourages the student to focus on learning activities, which increases satisfaction. Regular motivation is needed to assist students stay focused on the material that need to be learned [1]. If a person feels motivated, he or she will express a certain satisfaction level. This strengthens the self-development of the learners. Motivation should begin during the commencement of the session to maintain the learners' interest and pay close attention towards what is to be learnt [1]. Motivation improves the performance of learning [3]. Therefore, it is important to understand students' motivation level in an educational setting so that the educators can later adopt the necessary measures to enhance students' learning process [4].

The ODL system in India has played an important role in democratizing the nation's higher education system. In 1962, the introduction of correspondence courses under Delhi University has changed the outlook of higher education. In 1982, an open university was established in Andhra Pradesh (later known as Dr. B R Ambedkar Open University), and three years later, IGNOU was founded. Conventional universities also expanded their enrollment by establishing directorates for distant education in parallel with the open university system. Both on-campus and distant learners are served by these dual mode universities. One of the biggest obstacles facing ODL universities is providing academic programmes to students who are dispersed throughout their various regions. Information and communication technologies (ICTs) have given a huge boost to the rapid growth of Open and Distance Learning (ODL) globally [5]. Motivation is a powerful factor in explaining learner performance in distance education [6]. Students' motivation to begin and continue learning is essential for achieving favourable learning outcomes.

Dropout rate is one of the primary concerns of our educational institutions [7]. Dropping out of distant education without a final degree, diploma or certificate is a major problem in today's knowledge-based society [8]. Dropping out is clearly linked to institutional failure, which may be traced back to both cognitive and motivational factors. Students drop out because they lack the cognitive ability and/or motivation to complete a specific course of study. The purpose is to guide the relationship between teacher and student by offering a clear, coordinated, and thoroughly examined plan of action for implementing any adjustments that may be required to improve the learning experience. Students enroll in distant courses to achieve their personal and professional goals. More flexibility and unfettered digital access to enormous amounts of knowledge is enticing, which accounts for the wide popularity of enrollment in distant courses.Motivation to learn is particularly important because it's a prerequisite for self-regulated learning [9]. Students must be motivated to start learning and to stay motivated throughout their studies to properly self-regulate their learning. Students face motivational challenges during their studies. Students' motivational values for various educational courses decline overall between first and twelfth grade [10]. Lack of motivation, poor performance, and financial concerns were identified as key predictors of dropout [11]. Staying motivated over time in a self-directed learning setting is a big challenge for higher education students [9].

2. MOTIVATION AND DISTANCE EDUCATION

ODL Institutions will have to strengthen their distance-learning strategic plans by identifying and understanding distance-education trends for student enrollments, student support, and larger academic, technological and economic issues [12].We need to modify our strategy, to increase the gross enrolment ratio (GER) in higher education, as specified by NEP 2020. Providing physical infrastructure to a large number of students is problematic in the conventional educational system. Many reputable universities saw distance education as a way to meet the rising demands of students who lacked the resources to pursue higher education through traditional means. As a result, distant learning is now the most popular form of education in India. There were several barriers in the conventional education system that many students were unable to overcome. And hence, individuals are becoming increasingly interested in distant education. Distance education is one of the most popular educational innovations, allowing many aspirants to reach their goals with minimal effort. Distance education is one of the most significant moves in the lives of numerous candidates and is currently available at their doorsteps.

Compared to traditional classroom education, distance learning requires higher levels of self-regulation, motivation, and independence from the student. Several research have been conducted to examine the connection between motivation and learning achievement, as motivation has an important effect on the learning process. Keller introduced the ARCS motivation model, which provides a framework for students to become and remain motivated. It is important to grab and maintain students' attention in order to inspire learning. Relevance is determined by the teacher's capacity to make the connection between the learning objectives of the students and their achievement. Confidence refers to a teacher's capacity to foster in the learner the belief that he or she can successfully manage the taught subject.Satisfaction stems from the learner's sense of accomplishment. Facilitators must consider the aspects that may motivate or demotivate the learner. As a result, design the course appropriately to ensure its success and effectively engage students. In educational contexts, motivation indicates how much attention and energy students pay to specific learning tasks. High levels of motivation are connected to active participation in learning, academic success, enjoyful learning, acceptance of challenges, holistic learning, and creative thinking. Low motivation contributes to low retention rates in distance learning. There are a number of motivation frameworks that include elements of anticipation and value that can help with the methodical planning and creation of learning experiences that address the motivating aspects of learning. Keller's ARCS model is a well-known motivation design framework. The ARCS categories provide a framework for creating instructional strategies that evoke interest in students, demonstrate the value of what they are learning, boost their confidence, and provide both internal and external rewards [13]. The ARCS model is important to education, especially for distance learning and monitoring students' motivation throughout the learning process. Motivation plays significant role in determining whether students continue their courses. This model, which emphasizes extrinsic motivation, was created to help students become more intrinsically motivated. Effective motivational techniques can also be developed using the ARCS model as a design guide. As a result, it is vital to evaluate students' motivation levels in the ODL system so that ODL professionals can later implement the appropriate measures to improve students' learning experiences.

2.1ARCS Model of Instructional Design

The ARCS Model of Motivation was developed in response to the need for more methodical approaches to recognizing and resolving learning motivation challenges.This helps in improving our understanding of the critical elements influencing motivation to learn new

subject. Attention, relevance, confidence, and satisfaction are the four elements that make up ARCS.

- Attention: It pertains to the interest of the students. It is important to grab and retain the students' interest and attention.
- Relevance: The learning process should demonstrate the significance of the subject matter so that students can make connections between subject and the real world.
- Confidence: This aspect focuses on creating success expectations in learners, which allow them to govern their learning processes.
- Satisfaction: Motivation and satisfaction are directly related. Learners should be satisfied with their achievements during the learning process.

Blended teaching method based on the ARCS model, process, and strategies have enhanced and/or sustained students' motivation and kept the subject interesting in an online environment, and ultimately improved their learning [14]. ARCS Model offers an approach to diagnosing students' motivational issues [15].To help in the execution of the ARCS model during the instructional design and development stages, Keller (1993) designed the IMMS, an instrument for measurement which functions as a data-collection instrument for detecting motivational issues within instructional materials. The IMMS has 36 Likert-scale survey items in total for ARCS model, with 12 items measuring attention, 9 measuring relevance, 9 measuring confidence, and 6 measuring satisfactions. All 36 IMMS items of ARCS were employed, with minimal modifications to match the computer-based lesson format.

3. RESEARCH QUESTIONS

1. What is the overall motivation level of ODLstudents at higher education level under the dual mode university?
2. Is there any gender difference in motivation levels among the ODL students at higher education level under the dual mode university?

4. OBJECTIVES OF THE STUDY

It has been established that motivation is the important component that motivates and sustains learning behaviours[16]. The major objective of the research was to study the overall motivation level and compare the motivation level of ODL students with respect to gender under the dual-mode university. Inorder to address the motivating gap among ODL students, a survey was carried out and students' motivational needs were examined.

5. METHODOLOGY

The quantitative research method was employed in this study. To measure and assess students' motivation level in the distance education environment, survey was administered for two weeks during Personal Contact Programme (PCP) for the academic session of 2023-2024.

5.1 Population of the study

The population of the study comprised allstudents studying in the M.A./M.Sc. programs through ODL mode under the dual-mode university in West Bengal.

5.2 Sample of the study

The sample of the study comprised 77 (25male and 52female) ODL students studying in the M.A. /M.Sc. programs under the dual-mode university in the state of West Bengal.

5.3 Instrument and Data Analysis

The IMMS measures learners' reactions to the learning materials which incorporated the ARCS strategies[17].Information and data are gathered from participants through IMMS questionnaires.The redesigned IMMS questionnaire were distributed to the ODL students. The IMMS has 36 questions and four dimensions. The ODL students were asked to rate each item on a 5-point likert scale ranging from 1 (not true) to 5 (very true). The IMMS instruments contain ten reversal items. When it comes to the reverse items, a lower score on the reverse item indicates a stronger motivational score from the students. When applying this research tool, the reverse items score must be manually reversed.

The IMMS was developed to determine whether the Self Learning Material (SLM) complies to the ARCS principles and finding out the ODL students' motivation levels. A test for reliability was run in order to assess the IMMS findings. The level of motivation was then assessed using some basic statistics. The t-test was performed to examine whether there was a difference in motivation levels between male and female ODL student groups.

6. Study Results and Discussion

6.1 Scale Reliability

The standardised Cronbach Alpha was 0.92 (n=77), which is the overall reliability of all the dimensions. Follow Table 1 for the score of reliability.

Table1. Reliability of IMMS Questionnaire

Scale	Cronbach's Alpha on Standardised Items	N of Items	N
Attention (A)	0.95	12	77
Relevance (R)	0.84	9	77
Confidence (C)	0.89	9	77
Satisfaction (S)	0.83	6	77
Total scale (ARCS)	0.92	36	77

The reliability for each of the scales on standardized Cronbach Alpha was Attention 0.95, Relevance 0.84, Confidence 0.89, and Satisfaction 0.83, indicating that the IMMS results were reliable.

6.2 ODL Students Motivation Level

The minimum overall motivation level among the 77 participants was 2.83, and the maximum level was 4.97. The overall motivation level mean score was 4.32, indicating a highly favourable outcome. About 61 (79.23%) of the 77 respondents had high level of motivation, 15 (19.48%) had upper-medium level of motivation, 01 (1.29%) had medium motivation level, and surprisingly no one had low level of motivation.

The results showed that most ODL students were satisfied with the course design, with 79.23% having high level motivation and 19.48% having upper-moderate level of motivation. The mean score for overall motivation among ODL students varied as well; the minimum mean score was 2.83, while the highest mean score was 4.97. Follow Table 2 for the scores of motivation level.

Table2. Scores of Motivation Level (N=77)

Item	Minimum	Maximum	Mean
Attention (A-12)	2.58	5	4.27
Relevance (R-9)	3	4.88	4.29
Confidence (C-9)	2.77	5	4.33
Satisfaction (S-6)	3.16	5	4.36
Overall (ARCS-36)	2.83	4.97	4.32

6.2.1 Comparison of ODL students' motivation level

The study's 77 respondents' demographic information is displayed in Table 3. There were 25 male and 52 female participants who were in their third semester of master degree programme under the ODL mode of study.

Table 3. Demographic Data (N=77)

Gender	**Participants**	**Percentage**
Male	25	32.46%
Female	52	67.54%

To find out if there was a difference in levels of motivation among different ODL student groups, a comparison of motivation levels between groups based on gender was performed. In order to compare the levels of motivation of the male group (N = 25) and female group (N = 52), an independent t-test was performed. No significant difference between the male and female groups' motivation level scores ($p = 0.11$, two-tailed) was found.

6.2.2 Further assessment of ODL students' motivation level

In this section, ODL students' levels of motivation were assessed using four subscales of ARCS model. As previously stated, each dimension includes few reverse items. For the reversal items, a lower score implies a stronger level of student motivation. To make simpler to understand, we manually reversed the score. See Table 4 for the mean scores of each item.

For example, in Q5 of the attention scale “The pages of this SLM look dry and unappealing”, learners gave a score of 0.52 which meant learners did not think that pages of the self-learning material look dry and unappealing. This revealed that ODL students' actual level of motivation was high. So, we have reversed the score manually to 4.48.

The attention statement contains 12 questions, 7 of which are positive and 5 of which are negative. The total mean score in the attention dimension was 4.27, the maximum score was item 4 (M=4.65), the minimum score was item 10 (M=3.87). The counting result indicates that this variable is in a high level of motivation range (4.00 - 5.00) with a value of 4.27. Thus, learning motivation level of ODL students based on attention in this programme of study is high. It indicates that students' motivation levels were highly favourable within the context of attention. Based on the data, ODL students were most satisfied with the item 4 which indicates that the programme of study is not so abstract and because of this helps to keep my attention (M=4.65). ODL students believe that the variety of reading passages, exercises, activities, graphics, and other materials helped them to stay focused on their education(M=3.87), although there's still space for development.See Table 4 for mean score of each dimension.

Table 4. ODL Students Motivation Level based on ARCS

Attention	Mean	Relevance	Mean
Q1. There was something interesting at the beginning of this ODL programme of study that got my attention.	4.45	Q1. It is clear to me how the content of this SLM relates to things I already know.	4.46
Q2. These self-learning materials in ODL are eye-catching.	4.15	Q2. There were stories, pictures, or examples that showed me how this SLM could be important to some people.	3.27
Q3. The standard of the SLM writing helped to keep my attention.	4.16	Q3. Completing this ODL programme of study successfully was important to me.	4.88
Q4. This ODL programme of study is so abstract that it was hard to keep my attention. (Reverse)	4.65	Q4. The content of this self-learning material is relevant to my interests.	4.48
Q5. The pages of this SLM look dry and unappealing. (Reverse)	4.48	Q5. There are explanations or examples of how people use the knowledge in this programme of study.	3.82
Q6. The way the content is arranged on the self-learning material pages helped to keep my attention.	4.13	Q6. The content and style of SLM writing in this programme of study convey the impression that its content is worth knowing.	3.81
Q7. This ODL programme of study has things that stimulated my curiosity.	4.25	Q7. This programme of study in ODL mode was not relevant to my needs because I already knew most of it. (Reverse)	**4.92**
Q8. The amount of repetition in this ODL programme of study caused me to get bored	4.58	Q8. I could relate the content of this programme of study to things I have seen, done, or	4.54

sometimes. (Reverse)		thought about in my own life.	
Q9. In this ODL programme of study I learned few things that were surprising or unexpected.	4.06	Q9. The content of this ODL programme of study will be useful to me.	4.51
Q10. The variety of reading passages, exercises, illustrations, etc., helped to keep my attention on this distance learning course.	**3.87**		
Q11. The style of writing in SLM is boring. (Reverse)	4.15		
Q12. There are so many words on each page of SLM that it is irritating. (Reverse)	4.35		
Confidence	**Mean**	**Satisfaction**	**Mean**
Q1. When I first looked at this distance learning programme of study, I had the impression that it would be easy for me.	4.18	Q1. Completing the exercises in this programme of studyin ODL mode gave me a satisfying feeling of accomplishment.	4.57
Q2. This self-learning material was more difficult to understand than I would like for it to be. (Reverse)	**4.53**	Q2. I enjoyed this ODL programme of study so much that I would like to know more about this topic.	4.16
Q3. After reading the introductory information, I felt confident that I knew what I was supposed to learn from this programme of study under ODL mode.	4.26	Q3. I really enjoyed studying this programme in ODL mode.	4.51
Q4. Inside SLM many of the pages had so much information that it was hard to pick out and remember the important points. (Reverse)	4.21	Q4. The wording of feedback after the exercises, or of other comments in this programme of study, helped me feel rewarded for my effort.	4.12
Q5. As I worked on this ODL programme of study, I was confident that I could learn the content.	4.35	Q5. I felt good to successfully complete this programme in ODL mode.	**4.91**
Q6. The exercises in this programme of study were too difficult. (Reverse)	4.46	Q6. It was a pleasure to work on such a well-designed ODL programme of study.	**3.93**
Q7. After working on this programme of study for a while, I was confident that I would be able to pass a test on it.	4.52		
Q8. I could not really understand quite a bit of the learning material in this programme of study under ODL mode. (Reverse)	4.45		
Q9. The good organization of the content helped me to be	**4.06**		

confident that I would learn this self-learning material.			

The relevance statement has nine items in total, eight of which are positive statements and one of which is a negative statement. This variable is in a high category range (4.00 - 5.00) with a value of 4.29. The relevance dimension has a total mean score of 4.29, with item 7 (M=4.92) having the highest score and item 2 (M=3.27) having the lowest score. It demonstrated that ODL students considered the course material and curriculum to be pertinent to their jobs or areas of interest. See Table 4 for tabulated information.

There are nine items in the confidence statement, five of which are positive statements and four of which are negative statements. Although it falls into the same category as high motivation level (4.00 - 5.00). The total mean score in the confidence dimension was 4.33, with item 2 having the highest score (M=4.53) and item 9 having the lowest score (M=4.06). It indicated that the self-learning materials were very easy to understand and the exercises in this programme of study were not too difficult. However, the organization of the content need to be improved to grow more confidence among the ODL students. See Table 4 for tabulated information.

The Satisfaction statement contains six items in total. The satisfaction dimension has a total mean score of 4.36, with item 5 (M=4.91) having the maximum score and item 6 (M=3.93) having the minimum score. It revealed that the ODL students were generally satisfied with the course curriculum and programme of study and that they would be very happy if they could finish the entire course with success. The low score of pleasure to work on such a well-designed programme of study seemed like ODL students were not overall happy with the design of the programme. They expected there to be more improvement in course designing from ODL professionals. Although, the motivation level of ODL students based on satisfaction in this programme of study is high. See Table 4 for tabulated information.

6.2.3 Motivation Level of ODL Students based on combined ARCS Model

Table 5 shows the motivational level of ODL students depending on the aggregate values of the ARCS dimensions through the ODL mode of education at post-graduation level under the dual-mode university majority are in the high category motivation level, which is 61 ODL students (79.23%). While the upper-moderate category is 15 ODL students (19.48%) and the moderate category is 01 ODL student (1.29%). For more details, see the Figure 1:

Table5: Motivation Level Range

Category of Motivation Level	Value	F	Percentage
High level	4.00 - 5.00	61	79.23%
Upper-moderate level	3.50 - 3.99	15	19.48%
Moderate level	3.00 - 3.49	01	1.29%
Low level	<3.00	00	00
Total		77	100%

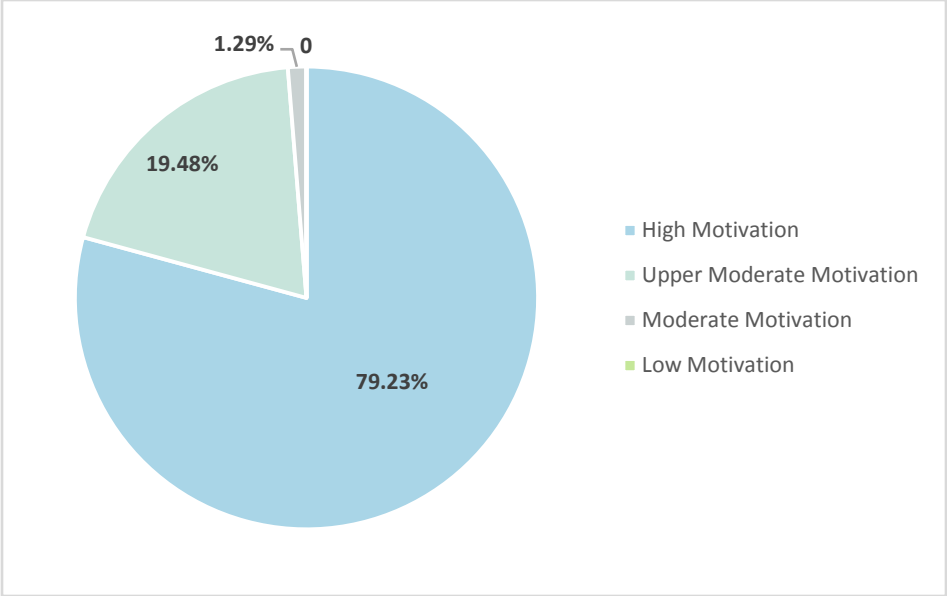

Figure 1. Motivation Level of ODL Students based on combined ARCS Model

7. Conclusion

Based on the responses of 77 ODL students, the average level of motivation was 4.32. The positive motivation levels indicated that majority of ODL students were satisfied with the programme of study and the self-learning materials provided to the ODL students at post-graduation level under the dual-mode university.

Item 7 of the relevance dimension “this programme of study was not relevant to my needs because I already knew most of it” (reverse) achieved the highest mean score 4.92, which meant majority of ODL students feltthat this programme of study through ODL mode relevant to their interest and needs. This indicated ODL students’ real motivation level was high.However, this thing cannot be ignored that item 2 of relevance dimension “there were stories, pictures, or examples that showed me how this SLM could be important to some people” received the lowest mean score 3.27. It showed that ODL students expect more interactive stories, pictures, and examples inside the SLM to develop more understanding about the subject.

Nevertheless, there are several possible ways that could mitigate the challenge of incorporating sufficient pictures, stories, and relevant examples while presenting the content during personal contact session or through SLM. First, the ODL professionals may consider having personal contact sessions (PCP) of “ask any questions” based on subject area, where ODL students could ask questions to answer. Second, an expert in Open and Distance Learning can think about offering their own model responses or solutions for the given assignments. In order to help with understanding, the ODL professional can also think about including a supplementary lecture video that demonstrates how the assignments are completed with examples.

After discussing the results of all variables, the average value for each variable is added together and averaged again. The purpose of this is to determine ODL students' motivation level under the dual-mode university using the ARCS model. Based on the calculations,

students' learning motivation, as measured by the ARCS model under the ODL mode of study, is in the high category motivation level (4.00–5.00), with an average value of 4.32. The findings of the independent t-test showed that there was no significant difference in the motivation levels of the male and female ODL students.

The attention of ODL students at post-graduation level under the dual-mode university is under high category motivation level with an average value of 4.27 and suggested to improve the writing of reading passages, check your progress section, exercises, assignments, illustrations, etc., which further help to keep my attention on the programme of study during learning activities.The relevance of programme of study, content, self-learning material is also under high category motivation level with an average value of 4.29 and suggested to include more interactive stories, pictures, or examples while developing self-learning material for ODL students. The confidence of ODL students based on programme of study, introductory session, learning material, organization of content is under high category motivation level with an average value of 4.33 and suggested for well organization of the content for confidence building. However, out of the four variables, attention has the lowest value. The satisfaction is also under high category motivation level with an average score of 4.36 and the highest value among the three other variables. The results suggested that the ODL professionals need to give more importance while designing the programme of study, course structure, and particularly self learning material for ODL students. It is also recommended to offer continuous feedback to the ODL students for better understanding of the content or subject matter.

The success and effectiveness of the ODL system largely depends on self-learning materials. Self-learning materials perform the functions of an effective teacher who guides, motivates, explains, discusses, asks questions, assesses progress, suggests appropriate remedial measures, and provides advice to learners. Self-learning materials emphasize pedagogical dialogues with the learner. While reading the course units, the learners interact with an invisible teacher and feel as if they are being taught by him/her. The learning materials also provide questions for self-check and thus increase curiosity of the learners. The success of self-learning depends on the quality of the learning materials. In distance education systems, the learners remain off the campus for most of their study time. The study materials, like a teacher in the classroom, should be highly encouraging for the learners. The materials should arouse curiosity, raise problems, relate knowledge to familiar situations and make the entire learning meaningful for them, providing reinforcement and feedback at every stage of learning.

By recognizing and catering to individual motivational profiles, ODL professionals can tailor teaching methods, course structure, curriculum design, and student support systems to better meet the diverse needs of ODL students. Moreover, ODL institutions can implement targeted interventions aimed at enhancing motivation, fostering a more conducive learning environment, and ultimately improving student outcomes.Based on our research findings, the following recommendations can be provided for strengthening the motivational experiences of ODL students in the distance learning setting. The first recommendation is to develop interactive and engaging learning materials that would facilitate active participation and collaboration amongst ODL students. Second, the learning materials should include variety of reading passages, exercises, illustrations, check your progress section, suggested readings etc. that will help to sustainstudent’s attention and create a supportive environment in this distance learning course.Third, it is recommended to provide continuous feedbck on student progress and performance to maintain positive experiences and suggest areas for improvement. Furthermore, it is recommended to reward and recognize student achievement as this practice boosts morale and motivation levels. Moreover, students should be encouraged to set clear and achievable goals for their academic journeys.

Additionally, supplementary articles, books, and personal contact session on time and study management can be added to assist students in self-assessment. Overall, resources and support should be rendered to assist students in becoming more effective and autonomous learners. By following these recommendations, ODL institutions can create a conducive motivational environment for student success.

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AUTHORS' CONTRIBUTIONS

This study was carried out in collaboration between both authors. All authors read and approved the final manuscript.

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