

Investigating Teachers' Beliefs about Students in Learning Biology: The Role of Teachers in Individual Learning Differences

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ABSTRACT

This paper attempts to investigate teachers' beliefs about students in learning Biology: The role of teachers in individual learning differences, the paper includes research objectives such as finding out the beliefs biology teachers hold about students, discovering how biology teachers' beliefs influences students' academic performance in biology, finding out the individual learning differences biology students possesses. The paper reviewed several previous works from scholars on different concepts revolving around the research study including; the teachers' beliefs, and individual learning differences. The sample for this study is made up of 50 teachers that would be given questionnaires to answer to find out their beliefs on students learning biology, and 50 students learning Biology to determine the correlation between the teachers' beliefs and students. The 100 respondents would be partitioned. The study has to do with inferential statistics. Inferential statistics is aimed at summarizing the properties of a population from the known properties of the sample of the population. Simple frequency, mean scores, and the percentage would be used for analysing the data because they will explain the phenomena under study.

INTRODUCTION

Background of the study

Biology is a subject taught in Senior Secondary Schools and higher education institutions to set the basis for human growth by grooming professional talents and revealing and reinvigorating unfulfilled qualities and capabilities. In the teaching-learning process, the link between students' academic success in biology and the teacher's belief system is critical. The Oxford English Dictionary (OED) defines belief as "mental acceptance of a proposition, assertion, or other person's testimony, or to a fact or truth on the evidence of awareness." We make judgments and evaluations about ourselves, others, and the world around us based on our beliefs. They are personal opinions based on observations or reasoned considerations ^[1]. Beliefs are reflections on all things about which we do not have sufficient information but have sufficient confidence to work ^[2]. According to Raymond, belief is a personal judgment based on personal experiences. "Eclectic aggregations of cause-effect assertions from numerous sources, rules of thumb, generalizations based from personal experience, values biases, and prejudices," writes ^[3]. Teachers have a lot of unproven assumptions, which impact how they think about students studying biology, how they go about their pedagogies, how they teach the topic, and how they react to certain scenarios.

Teacher ideas about the topic, teaching the subject, students, students learning the subject, and self, as well as instructional pedagogies, have an impact on academic performance and student accomplishment levels in biology. The majority of biology teachers, especially those without a background in education, generalize biology teaching. However, due to the nature of the topic, not all teaching techniques or tactics can be utilized when it comes to teaching biology. Many teachers use obsolete, teacher-centered teaching tactics, approaches, or procedures that are ineffective in the teaching-learning process. Uztosum has also cited several pieces of research that argue that teachers' practices and teaching pedagogies are influenced by their beliefs, implying that there is a need to raise knowledge of successful teaching techniques that take into account students' unique learning characteristics. Hands-on learning, which involves the active engagement of students in the experience of scientific concepts rather than merely having an audience perspective, is one novel teaching strategy that teachers may use to improve the teaching-learning process in biology.

Students may quickly connect with concepts with the use of visual hints, which generally augment aural information. Drawings, diagrams, and illustrations are used to aid theory, as well as build up instances to demonstrate its application. Fieldtrips entail going on a nature walk, visiting a nature center, visiting a scientist's house, or visiting a pet store to learn about science while experiencing it. Peer-to-peer teaching, in which students teach one other, encourages pupils to be enthusiastic about biology. ICT Enabled Learning is the use of information and communication technology (ICT) to teach biological ideas or subjects in a way that encourages open-source learning. Virtual science laboratories, multimedia approaches, projects, video clips, outdoor education, laboratory experiments (many instructors underestimate the influence of laboratory experiments), and other novel teaching techniques for teaching biology are available.

No student is unable to learn biology; however, the issue is with the teachers' belief system, information, views, values, theories, anticipations, teaching experiences, pedagogies, knowledge of the subject and its abstract concepts, principles, and personalities, as well as the teacher's thoughts about students learning biology. All of these things don't happen overnight; they take time to grow into a highly individualized belief system that limits the teacher's degree of awareness, cognition, judgment, and behavior toward the pupils. Many professors believe that

students are too responsible for their incapacity to study biology, which leads to low student academic performance in the subject. "A teacher should be humanistic, a facilitator rather than a director, and a guide rather than a ruler." A teacher should avoid acting as an authoritative person who is primarily concerned with information transfer since acting as an authoritative figure would hinder the teacher from forming strong relationships with her pupils, which will have an impact on the teacher's teaching methods. On the other side, being a guide and facilitator will assist the teacher in improving her relationships with her students. Teachers' assumptions or ideas about their pupils and how they learn might impact how they approach their teaching duties and interact with them. Teachers with varying perspectives on student learning tend to present a variety of classroom activities and promote a variety of classroom interaction patterns. Teachers who understand how their pupils learn may guide them and help them progress. When teaching biology, a teacher must believe that all students can learn, that not all teaching approaches work, that not all students learn at the same rate, that you must show enthusiasm and passion for what you teach, and that you must work together as a professional learning community to improve student's achievements, and that you must provide differentiated learning activities.

Students have varying levels of interest and skill [4]. Some children require additional instructor assistance, while others study independently. It is difficult for pupils to understand biology using only one approach or strategy. Each person learns in their way; some people learn best by hearing, seeing, reading, and touching stuff (Shaughnessy, 1998). It will be much more efficient to use diverse teaching approaches for different students based on their personal experiences and learning backgrounds, highlighting the unique variances and particular requirements of the students [5].

Students and teachers in educational settings spend a significant amount of time in classrooms communicating with one another. A teacher's actions and beliefs can have a long-term influence on how pupils view the learning environment that the instructor has established. There are no two pupils that are the same; they all differ in some manner. As a result, a competent teacher's task is to recognize and appreciate each student's individuality. Teachers are increasingly using this belief system in their classrooms. Instead of using activity-based teaching methods, teachers depend mainly on approaches that are simple yet ineffective and unsuited for teaching biology at the senior secondary school level.

Individual differences are mostly a psychological trait that distinguishes one learner from another. As a result, it aids in the identification of each student's uniqueness. Because no two individuals in a classroom learning in the same manner, it is unrealistic for a teacher to expect a group of students to develop proficiency in a specific field in the same way. The majority of instructors do not believe in their pupils, which poses a barrier in the process of identifying students' talents, skills, and abilities. As a result, changing instructors' mindsets from "I blame the students for their challenges in studying biology" to "I can intervene as a teacher to aid a struggling student" is critical. Instead of concentrating on what subject or topic to teach, teachers should pay great attention to which they are instructing and the manner they will employ. The teaching environment that the instructor creates is a critical determining element in determining the teaching-learning process's result. Every good teaching is enhanced by a friendly classroom in which students feel free to ask questions and contribute to courses without fear of shame or scorn. As a result of how the topic was taught in secondary school, many students lose their excitement, curiosity, and interest in studying biology in higher education. As a result, teachers confront the difficulty of maintaining students' passion, curiosity, interests and drive throughout their academic careers.

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Teachers in our community today frequently make judgments such as "he/she cannot understand biology," "he/she does not listen or pay attention in class," and "his/her behavior in class is disruptive." It is generally accepted that students have difficulties, but a teacher's ability to identify or determine a learner's abilities aids the teacher in Designing a syllabus, planning lessons, and determining methods or strategies that will benefit all students, according to the adage "there is ability in disability." As a result, students' biology achievement cannot exceed the professors' expectations.

Statement of the problem

Biology is a very comprehensive course, extremely detailed and wide, even in secondary schools, its syllabus is quite voluminous and most of the time is left unfinished by teachers in school, also in higher institutions, biology as a subject metamorphosed into various branches such as botany, zoology, genetics, fisheries, microbiology, biochemistry, and so much more, although biology appears to have a voluminous nature, no biological content can be wasted as every information about life is important, therefore due to its voluminous nature, biology contents cannot be fully covered or comprehensively taught in the allotted time, thereby, reducing the students learning outcome. Thus, to effectively teach this comprehensive subject to students, with several biology teachers using various teaching strategies, the teacher would need to have an in-depth understanding of the student's learning differences, so it's important to understand the role of teachers' beliefs in individual learning differences, how they view the student, and so on. This study is to look at diverse teachers' perspectives on pupils studying biology.

Purpose of the study

The main purpose of this study is to find out the various beliefs biology teachers have about their students and how the teachers affect the student's learning differences. Hence the purpose of this research is;

1. To find out the beliefs biology teachers hold about students?
2. To discover how biology teachers' beliefs influence students' academic performance in biology
3. To find out the individual learning differences biology students possesses.

Questions

The following research questions have been formulated to achieve the objectives of this study.

1. What beliefs do Biology teachers hold about students?
2. How do Biology teachers' beliefs influence students' academic performance in biology?
3. What are the individual learning differences biology students possess?

Hypothesis

Hypothesis 1: Biology Teachers hold no belief about their students

Hypothesis 2: There is no significant relationship between Biology teachers' beliefs and students' academic performance in biology.

Hypothesis 3: Biology students possess no individual learning differences

Significance of the study

The research might be beneficial to students, the university, and even numerous government parastatals and non-governmental groups. The important input received from respondents, as well as the replies reviewed, could assist

instructors in understanding the effects of their own opinions about pupils in studying biology. Institutes should invest more in awareness programs to improve teachers' views and actions toward their students and generate better outcomes, by designing curriculums to meet the diverse teacher qualities in the best interests of the students. The research will also give in-depth insight into a student's challenges based on individual characteristics, as well as viable remedies to such educational-related problems.

Scope and delimitation of the study

The self-report criterion is a drawback. More objective assessments of teachers' views should be used in a future study. This survey includes all secondary school biology instructors in the Bariga and Yaba Local Government areas of Lagos State. These are instructors that have a biology degree and are certified and qualified to teach biology in secondary schools. As a result, whether they have a biology-related degree or not, center instructors who do not teach biology are excluded from the research. Furthermore, the study is not gendered specific. It comprises both male and female undergraduates, as well as students at all levels of study.

Operational definitions of terms

Beliefs: An acceptance that something exists or is true, especially one without proof, something that one accepts as true or real; a firmly held opinion

Individual Differences: This is the difference, the non-similarities among individuals that distinguish or separate them from one another and make one as a unique individual in oneself.

Learning Differences: This is the difference, the non-similarities among individuals that distinguishes or separates their pattern of learning from one another making one's learning unique.

Teachers: This is a person who helps students to acquire knowledge, competence or virtue. Informally the role of teacher may be taken on by anyone

Biology: The study of living organisms, divided into many specialized fields that cover their morphology, physiology, anatomy, behavior, origin and distribution.

The objective of this chapter is to review relevant works done by other scholars, researchers, and educationists that are related to this study.

Beliefs are an important component of understanding how instructors shape their work, which is important for understanding their teaching approaches and classroom decisions. Biology is a very comprehensive course, extremely detailed and wide, even in secondary schools, its syllabus is quite voluminous and most of the time are uncompleted by the teachers in school, also in the higher institutions, although biology seems to have a voluminous nature, no biological content can be put to waste as every information about life is important, therefore due to its voluminous nature, biology contents cannot be fully covered or comprehensively taught in the allotted time, thereby, reducing the students learning outcome, therefore to effectively teach this comprehensive subject to students, teachers' beliefs have a deep impact on their classroom principles. Understanding this link is critical for instructors as they design and implement their new curriculum. Teachers' beliefs influence what they accomplish in the classroom, their attitudes, and their students' beliefs. Because teachers' beliefs influence what they accomplish in the classroom, their attitudes, and their students' beliefs, it is important to understand the role of teachers' beliefs in individual learning differences, how they view the students' learning abilities, how learning differences

differentiate the learner's ability to learn, and their learning outcomes in biology. This study is to look at diverse teachers' perspectives on pupils studying biology.

This chapter of the study will review relevant literature on the study under research. The review of literature will be done under the following sub-headings; Teacher's Beliefs-Definition of beliefs

-The nature of teacher's beliefs, Sources of Teacher's beliefs and Individual Learning Differences

-Age of Onset, Motivation, Aptitude.

LITERATURE REVIEW

Teacher's beliefs

Beliefs are an essential topic in all areas of human behavior and learning [6]. According to Breen and Bernat and Gvozdenko, the perceptions, beliefs, and attitudes that learners bring to the learning setting are critical components in the learning process. Learners have strong ideas about the nature of learning, the acquisition process, the efficacy of learning tactics, the presence of aptitude, and their success and teaching methodologies. Recognizing these beliefs and their implications on learning and teaching, as well as learners' expectations and techniques, can assist instructors in designing curricula and teaching approaches. According to Zheng, teachers' beliefs are important concepts in understanding teachers' cognitive processes, teaching strategies, and learning to teach. Teacher beliefs are important themes in teacher education because they assist instructors to develop their thoughts and values. Li demonstrated that beliefs play an important role in education. They aid in people's understanding of the world, influencing whether new knowledge is accepted or rejected. Beliefs represent memories and alter our view of events. Teachers' beliefs have a higher influence on lesson preparation, decision-making, and classroom practice than teachers' knowledge. Teachers' views shape their actual behavior with their students. Teachers will be able to pick and adjust their learners' behavior and educational choices if they can determine their learners' capacities [7]. Teachers' classroom activities and professional development are heavily influenced by their beliefs. According to Harste and Burke and Kuzborska, instructors make decisions about their classroom teaching based on their views about teaching and learning. They stressed that instructors' views have a significant influence on their goals, processes, responsibilities, and students. According to Richards and Rodgers, instructors have ideas about learning that help them develop a unique approach to teaching.

Teachers' views influence their judgments and classroom methods significantly. According to Nation and Macalister and Amiryousefi, what teachers do is defined by their beliefs. Similarly, Williams and Burden asserted that instructors' ideas about learning will have a greater influence on their classroom activities than any specific approach they are instructed to use. Furthermore, asserted that instructors' activities reflect their views about teaching and learning [8]. Understanding instructors' ideas about many aspects of teaching and learning are also critical. Riley asserted that when instructors' and students' views align, learning will improve. Due to the need for teacher education development and the importance of teacher beliefs in teacher education, the purpose of this study is to analyze topics relevant to teachers' views to discover the role of teachers' beliefs in improving teacher education.

Definition of belief

A belief, according to Pehkonen and Pietilä, is a type of subjective and experience-based knowledge. Raymond described belief as a personal judgment established as a result of experiences. A belief, according to Pourhosein

Gilakjani, is an assumption that begins with the phrase "I believe that." "Core" or "central beliefs" are beliefs that are tied to other beliefs [9]. If a belief is linked to other beliefs, it will have greater consequences. Beliefs are conceptual representations that convey a reality, truth, or trustworthiness to the possessor to secure reliance on it as a guide to personal thinking and conduct [10]. Peacock defines beliefs as psychologically held appreciations, assumptions, or theorems about the universe that are thought to be accurate. Huang defined beliefs as learners' preconceptions about learning [11]. The phrases "opinions," "ideas," or "views," according to Kunt and Wang, relate to "beliefs." Beliefs are judgments and assessments of ourselves, others, and the world around us [12,13]. They are personal thoughts formed *via* observation or reasonable thought [14]. Beliefs are described as a set of beliefs formed in people by their experiences and the overlapping of concepts during the learning process [15]. Beliefs are reflections on all things about which we do not have sufficient information but have enough confidence to work [16]. Teachers' beliefs are described as their reasoning and perspectives on teaching and learning [17-19].

The nature of teachers' beliefs

Instructors' ideas demonstrate a wide range of information, and teachers comprehend their surroundings by constructing a complex system of personal and professional knowledge [20]. Many instructors' professional knowledge is legitimately regarded as belief. As teachers' experiences in the field grow, so does their expertise, becoming a highly individualized belief system that restricts their understanding, judgment, and conduct [21]. Beliefs develop gradually throughout time. Beliefs include both subjective and objective components, and they serve as the foundation for teachers' decision-making and classroom behaviors [22]. Whether held consciously or subconsciously, a belief is accepted as true by the individual and influences their thought and conduct [23]. People's beliefs are formed early in life as a result of their education and experiences [24]. When students complete their education, they adopt beliefs about learning and teaching. Teachers' views fall into five categories: ideas about learners and learning, teaching, curriculum, learning to teach, and beliefs about the self and the nature of teaching. These five areas are inextricably linked [25]. Beliefs interact with one another, contradict one another, and demonstrate the complexities of belief systems [26]. Woods proved that beliefs are non-consensual, include the existence of abstract entities, are evaluative, contain a significant degree of episodic/anecdotal material, vary in strength, span from strong to weak, and have a large degree of overlap according to Richards, belief systems are a significant source of instructors' practices [27]. That is, the knowledge, perspectives, attitudes, expectations, theories, and ideas about teaching and learning those instructors develop over time and bring to the classroom. Green, Pajares, and Abdi and Asadi split teachers' belief systems into core and peripheral beliefs [28-30]. Core beliefs are consistent and have a greater influence on behavior than peripheral beliefs. Burns investigated the opinions of six instructors and discovered a core set of essential ideas that influence how they teach [31]. These ideas are relevant to the nature of learning as it relates to the start of learning, learners and their ability to learn, and the nature of the classroom and the function of the teacher in it. Teachers' beliefs about teaching and learning are influenced by their own experiences as learners and are established when they enter university, act as a filter through which teachers explain new information, and exert a deep effect on teachers' instructional practices, are not always indicated in what they do in the classroom, have a significant impact on their teaching decisions, and greatly affect what and how they teach, according to Phipps and Borg and Abdi and Asadi [32-34].

Sources of teachers' beliefs

The roots of teachers' views, according to Kindsvatter, Willen, and Ishler and Abdi and Asadi, are as follows: 1) the teachers' own learning experiences [35,36]. Many instructors are aware of their earlier experiences as students and how they were taught, which influenced their views on teaching. 2) Previous teaching experience. Teaching experience is the primary source of instructors' views, as to how a certain approach is used to a specific set of students may influence those ideas. 3). the personality of the teachers. Some professors like a certain approach because it fits their personality. 4). Principles-based on education or study. Teachers can acquire concepts of second acquisition research, education, or schools of thinking like psychology to form their opinions. Instructors' views are developed during their teaching processes, according to Zhou Guotao and Liu Xiaoming and Li, and show the teachers' subjective knowledge of educational phenomena, notably towards their teaching skills and their students. Teachers' ideas are influenced by social history and culture, according to Xin Tao and Shen Juliang and Li [37]. Instructors' experiences shape teachers' ideas, according to Li [38]. Teachers go through a variety of self-construction processes. According to social psychologists, social culture has a significant impact on instructors' beliefs. According to them, these beliefs are formed as a result of embracing culture. Personal experience, experience with instruction, and experience with formal knowledge are the three primary sources of teacher views, according to Richardson [39]. Kukari showed that there is a link between cultural and religious teaching and learning behaviors [40]. Teachers' knowledge of teaching and learning before becoming learners of teaching is defined by these behaviors. Both the theoretical components of teacher training and the teaching actions during the experience are influenced by teachers' views and understandings [41-43]. According to Knowles, teachers' views are established throughout the course of their lives and are influenced by a variety of things such as events, experiences, and other people in their lives. Some beliefs, according to McGillicuddy-De Lisi and Subramanian, are derived from culture [44]. Some people are shaped by their experiences, which are then shaped by their society. As a kid, a family member, a parent, or a teacher, people share very comparable experiences. These encounters shape their perspectives on students and curriculum development. Teachers' opinions are influenced by four factors. Content knowledge, educational resources, formal teacher education, and experience are the four components [45]. According to Mansour, teachers' teaching ideas about their duties, learners' responsibilities, science goals, and teaching techniques are shaped by personal religious beliefs derived from religious principles. According to the study, instructors' religious beliefs functioned as a 'schema' that influenced their views. Past learning or teaching experience, according to Richards and Lockhart, is not the exclusive source of beliefs. Other factors have a role in the formation of beliefs. Established practice, personality traits of instructors, educational concepts, research-based data, and principles derived from a technique are all examples. There are two types of experiences, according to Mansour: formal and informal. A formal experience refers to the formal education that instructors have received, whether at school or university. Teachers' everyday life interactions may alter, reinforce, question, or change their attitudes and expertise as a result of their informal experience. In this sense, Zeichner claimed that both informal and formal experiences are 'socialization effects,' claiming that instructors' classroom instruction had a greater influence on teachers' ideas than their official university experiences.

According to research, instructors' preconceptions about teaching and learning limit their ability to be receptive to new ideas. Teachers join the teaching profession with preconceived notions about teaching and learning that help them improve their classroom practices. He went on to say that bold instructors feel that explicit education is the best way to educate, whilst less experienced teachers tend to teach implicitly. Many studies have discovered a link between instructors' beliefs and their teaching techniques [46]. Teachers' perceptions regarding L2 teaching and

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learning were investigated using research and lesson plan analyses by Johnson. Many teachers possessed defined theoretical ideas that suggested one of three methodological approaches: function-based, skill-based, or rule-based approaches, according to the findings of this study. At the time of the study, many instructors had theoretical ideas about the function-based approach. Johnson watched the classroom instruction of three instructors, who were chosen from a group of 30 volunteers based on their diverse viewpoints. Three instructors' teaching behaviors were found to be congruent with their theoretical beliefs, according to the findings. Teachers, according to Johnson, educate based on their theoretical views. Jones and Fong interviewed 30 pre-service and 27 in-service teachers and found that teachers' experiences had a significant impact on the formation of their teacher-centered, textbook-based teaching ideas. Despite their exposure to numerous teaching approaches, many teachers maintained their former ideas, according to the findings. Schulz conducted research into the cultural inequalities in learners' and instructors' perceptions of the value of education. Schulz administered a questionnaire to 607 Colombian international learners and 122 of their instructors, as well as 824 foreign learners and 92 of their teachers from the United States. Schulz discovered that most instructors in both the United States and Colombia believed that foreign teaching was vital and that Colombian teachers believed in the importance of instruction more than their American counterparts. Teachers' preset ideas about teaching were investigated by Algozzine, Kissau, and Yon, who discovered that these beliefs vary among teachers. A total of 222 instructors took part in the research. Teachers with more than ten years of experience have strong feelings about the importance of teaching. Teachers' perceptions regarding instruction were investigated by Johnston and Goettsch. Teachers considered that a conscious perceptual grasp of the various points was vital and valuable, according to the findings of their study, and it was expressed in their training. Burns investigated instructors' ideas about teaching writing and the impact of these beliefs on their students' writing through class observations and interviews. These views had a significant influence on the instructors' writing teaching in the classroom. In Malaysia, Macalister conducted research. The researcher chose 60 Malaysian teachers to investigate the influence of teacher training courses in shaping teachers' views on the importance of learning. The findings of his study revealed that instructors hold a variety of views about teaching, and professional development that ignores teacher trainees' existing beliefs would not have an impact on their teaching beliefs. Teachers have strong views about teaching and learning, which are convenient because they are knowledge transmitters and information dispensers who act as filters for incoming information, accepting rather than challenging current beliefs. Teachers' ideas are critical in comprehending the challenges of teaching and learning and developing better educational programs. If modifying teachers' ideas is necessary for their professional growth, Freeman and Johnson believe that teacher education should intervene with changing teachers' beliefs if that is essential for their professional development. The researchers went on to say that teacher education programs and educators should understand how their students/teachers form views and how those beliefs influence teaching principles. The impact of teacher education on influencing teachers' opinions has been studied by certain scholars. Some have emphasized the importance of teacher education programs in influencing instructors' opinions. Beliefs are supposed to influence behaviors, and experiences can lead to changes in beliefs, according to Richardson. Teacher educators should give chances for teachers to notice and explore their views about teaching lesson material, according to Grossman, et al. Teachers' views, according to Donahue, influence the acceptance of new approaches and play a vital part in teacher development. Teachers should be given training courses to help them integrate their values into their lessons and incorporate them into the course content, according to the study. Instructors should be able to refine their course material through their belief systems, and teacher development programs should allow teachers to reflect on their views about teachers and teaching.

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Peacock looked at the impact of a teacher education program on changing instructors' attitudes about learning. Peacock looked at how the instructors' beliefs changed over time and found no significant changes. He concluded that instructors' ideas were constant and never changed. Teachers' views influence the realization of new knowledge, the comprehension of educational changes, and the successful implementation of educational reforms. Several studies have looked into instructors' and students' perceptions of various aspects of vocabulary teaching and learning. Using a questionnaire, Tran explored Vietnamese teachers' attitudes toward vocabulary teaching and learning. The findings of this study demonstrated that reading is an excellent way to improve vocabulary, and that technology may help students acquire vocabulary components. Augustyn also looked at how German communicative-approach students felt about vocabulary teaching and learning. The researcher realized that by combining translation and extensive reading, vocabulary items might be readily taught and remembered at the beginning stages. Könings, Brand-Gruwel, and Merrinboer investigated the relationship between the successful implementation of a change and teachers' apprehension of the reform. The reform's goal was to create a powerful learning environment that would improve learners' problem-solving and learning abilities. The findings revealed that teachers serve as coaches rather than instructors and those teachers are more responsive to their students' progress and challenges. Kim used a questionnaire to investigate 29 instructors' and their 286 students' attitudes about EFL instruction. The researcher went on to say that such disparities in opinions between professors and students might have a detrimental impact on students' learning. Chou investigated how instructors' beliefs impact their performance. The researcher looked into instructors' attitudes on teaching reading. There were no significant differences in teachers' views and approaches, according to the findings of this study. Shun looked at teachers' beliefs and how they relate to teaching practices. According to the findings of this study, there were no significant discrepancies between instructors' beliefs and the use of instructional approaches. Teachers' earlier learning experiences influence their learning beliefs, which build the foundation of their teaching knowledge throughout teacher education. Teachers' beliefs, according to Johnson and Numrich, are founded on prior experience with classroom practice. According to Johnson, instructors' instructional judgments were influenced by their own learning experiences, which included images of teachers, resources, activities, and classroom structure. In a study conducted by Richards, Ho, and Giblin, it was discovered that teachers' opinions alter dependent on their perceptions of their position in the classroom and their professional expertise. Teachers' teaching ideas and classroom practice were investigated by Bisland, O'Conner, and Malow-Iroff. There was no correlation between instructors' opinions and classroom practices, according to the findings. Harcarik looked at the connection between instructors' knowledge and beliefs and their classroom practices. The findings of this study demonstrated that in the areas of resources, classroom practices, and time, there is a link between teachers' views and their classroom practices. Based on the findings of the preceding research, it can be stated that training courses, learning experiences, professional development, teaching experiences, and teaching techniques influence teachers' views. Teachers employ their prior beliefs to teach and learn, and these beliefs influence what they learn and how they learn in their teaching programs. According to certain research, teacher education has a significant influence on modifying teachers' opinions. The research above indicated that instructors' attitudes about teaching and learning are influenced by their prior beliefs. What teachers perceive about certain developments in education is tied to what they understand about them. As a result, for instructors to have a better grasp of the specific changes in teaching, they must first gain a better awareness of their own beliefs.

Individual learning differences

Individual Differences (ID) in learning refer to factors such as the age of onset, motivation, aptitudes, learning tactics, personalities, and cognitive styles, among others, that influence learning outcome and final accomplishment. This gives a quick overview of individual differences in knowledge acquisition, focusing on the first three. This is because the students' perspective on knowledge acquisition, as well as their mental and psychological states, will have a direct impact on knowledge acquisition, but they are influenced to a large extent by these general factors. Individual Differences (ID) in learning refer to factors such as the age of onset, motivation, aptitudes, learning tactics, personalities, and cognitive styles, among others, that influence learning outcome and final accomplishment. This gives a quick overview of individual differences in knowledge acquisition, focusing on the first three. This is because the students' perspective on knowledge acquisition, as well as their mental and psychological states, will have a direct impact on knowledge acquisition, but they are influenced to a large extent by these general factors. For example, when we are learning at school, we do not wish to learn on our initiative; nevertheless, as learning progresses, people grow increasingly interested in learning more, considering studying abroad or attending university. It demonstrates that there is a strong link between knowledge, learning, and motivation, that psychological elements, as well as environmental factors influencing these components, have an impact on learning behavior, and that aptitude is the only way to address the problem-how accomplishment inequalities are generated.

Age of onset

Age is one of the aspects that contribute to individual differences in knowledge acquisition, but what is the link between the age at which people begin learning new things and their degree of information acquisition is a hotly debated issue in the field of acquisition. Some scholars believe that the earlier knowledge acquisition occurs, the better the acquisition effect achieves, and the higher his level, and advocate the slogan "the younger, the better." Others, however, believe that there is little correlation between the age of onset and knowledge acquisition effectiveness. The adult acquisition can also achieve a high degree of knowledge. The term "critical phase" was used in the realm of biology to describe the moment at which an organic person is most vulnerable to external stimuli. The Brain Plasticity Hypothesis offered by neurologists Penfield and Roberts for the clinical phenomena of aphasia is the crucial period hypothesis in terms of knowledge acquisition. They think that information acquisition is directly linked to the brain, and that the optimal stage of knowledge acquisition is before the age of ten. Humans may easily and swiftly grasp knowledge in the natural world without outside intervention or teachers during this period; however, following puberty, the left and right hemispheres of the brain execute separate roles, and lateralization may develop. Penfield and Roberts' theory was adopted and refined by Lenneber, who suggested the current knowledge critical phase hypothesis. He believes that the period between the ages of two and puberty (10-12 years) is critical for children's information acquisition and that it is during this time that the natural evolution of knowledge may be accomplished. There are considerable disagreements over the precise cutoff time, which refers to the age of onset and offset. Some late learners, on the other hand, will be functionally competent with information acquisition due to high aptitude, high drive, and the use of effective learning methodologies.

DISCUSSION

One of the most active variables in knowing and learning is motivation. Motivation elements and various motivation theories have inherent and ongoing relationships. Due to its role in shaping a person's decision, learning perseverance, eventual accomplishment, and learning rating, motivation is also regarded as a significant

individual difference element. There are two primary themes in the research of learning motivation at the moment. The first is to explain the components of motivation as well as the theoretical framework of motivation; the second is to use empirical approaches to investigate the internal structure of motivation. Although the motivating aspects were established, there was no additional investigation of the link between the intrinsic structure of motivation and the components of motivation in terms of theoretical study. Existing empirical study has not been able to thoroughly address the internal link between the motivation structure and the individual's will component, and external influences have not been sufficiently studied. We should keep to a mix of theoretical and empirical research, look for new ways to motivate students to study and encourage teaching. Clément defined motivation as "the link of effort, a desire to achieve a goal of gaining knowledge and good attitudes toward learning." If a person has a strong positive attitude toward learning, this is referred to as integrative orientation. Instrumental orientation is defined as when a learner's motivation is motivated by utilitarian goals to attain favorable outcomes, such as satisfying an educational requirement. According to Gardner, a Canadian linguist, motivation is the internal power and motive that drives people to behave, including personal intention and desire. In his research, he created the Attitude/Motivation Test Battery (AMTB) by employing 104 motivation and attitude questions. Gardner believes that motivation is separated into integrative and instrumental motivation depending on the goal of learning. If the goal of learning is to get a better comprehension of concepts or to interact with a group, this is an example of integration motivation; instrumental motivation stresses the true worth and advantages of acquiring new information. Its most distinguishing feature is that it lacks both persistence and selectivity. Gardner examines the theoretical framework of knowledge learning motivation from a social psychology perspective, laying the groundwork for motivation theory. Deci and Ryan, two American psychologists, proposed the notion of self-determined cognitive motivation in the 1980s. According to Deci, intrinsic motivation refers to the completion of a task based on the happiness of interest and the activity itself move, which is a highly autonomous type of motivation. Extrinsic motivation refers to the completion of a task based on the happiness of interest and the activity itself move, which is a highly autonomous type of motivation. The more the internal drive, the greater the self-awareness, and the more visible the consequence. Extrinsic motivation refers to an individual's desire to do something to be affected by other people's external causes. Dornyei, a Hungarian scholar, proposed the three-dimensional framework theory of learning motivation in the 1990s, believing that learning motivation should begin at the knowledge level, that research and measurement should take place at the student level and the level of a teaching situation, and that these three levels contain different factors in the learning process. Dornyei's learning motivation framework is notable for reflecting the organic combination of learning motivation and teaching situation, as well as providing empirical support for the effect of motivation research in the school education scene, which fully demonstrates the diversity and complexity of learning motivation factors.

CONCLUSION

Since the beginning of the twentieth century, as one of the key elements that lead to individual variances in the process of information acquisition, it is commonly recognized as "the finest predictive instrument for forecasting the effectiveness of learning." Aptitude is always defined as "raw learning power," which suggests that learners have certain special skills. John Carroll was the first to propose this idea. However, with the development of cognitive psychology and other disciplines since the 1990s, scholars have begun to reflect on and attempt to break through this static point of view, gradually completing the fundamental change that development can be dynamic and will

be changed due to other conditions. This new dynamic concept is also being actively employed in the field of knowledge acquisition. Because learning is dynamic, it is going to be tied to other individual aspects when engaging with the external environment and this relationship is likely to have an impact on the effect of knowledge acquisition. However, most relevant studies in the last 10 years have focused on the link between learning and the external environment, while research on the association between learning and other individual characteristics is limited and dispersed. According to John Carroll, aptitude is the first capacity to learn anything. There is little question that high aptitude learners learn faster than low aptitude learners, and they can achieve a higher degree of final success as a result of the aptitude effects. Recently, much study has focused on the components of learning aptitude, which have gone through two stages: test-driven and theory-driven. John Carroll did a factor analysis in early test-driven aptitude research, and four components (coding ability; sensitivity; inductive knowledge acquisition capacity; associative memory) were retrieved with the best predictive value. The first is number learning, in which participants are supposed to listen to, memorize, and write down numbers to investigate auditory and memory linked to sound-meaning links. The second job is to match functions of words such as subject or object of words in different texts to measure sensitivity. In the study, the author emphasizes aptitude for certain ideas while disregarding other social and discursive components of knowledge usage. This evaluates learning rather than acquisition; therefore future research should stress communicative approaches to training. As a result, this is a practical method for investigating the link between learning and other individual aspects. Furthermore, few scholars are interested in issues such as learning capacity and cognitive style, as well as learning ability and anxiety. As a result, the field remains unexplored. A vast number of studies have revealed that there is a link between aptitude and other individual aspects of learners, owing to the complexity of learning and the various and different individual elements in knowledge acquisition.

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