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**Self-directed Learning (SDL) and Development of
Competencies among Students of the University of Bamenda.**

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Abstract

Purpose: This study examines the relationship between self-directed learning (SDL) and development of competencies among students of the University of Bamenda (UBa).

Methodology: The argument for this study anchored on Vygosky's Social Constructivism Theory, Cognitive Apprenticeship Theory of Collins et al., and Tchombe's Mediated Mutual Reciprocity Theory. A correlational survey research design, with a quantitative approach for data collection was used. A sample of 254 students, derived using two probability (stratified random and simple random) sampling techniques and two non-probability (convenience and purposive) sampling techniques, participated in this study. Data obtained were analyzed descriptively and inferentially. The Spearman's Rho correlation test was used to test the specific research hypotheses.

Findings: Findings showed that, there is a significant and positive relationship between identification of learning problems and development of competencies among students ($P < 0.000$) ($R = 0.410^{**}$). Similarly, findings on hypothesis two showed that there is a significant relationship between application of appropriate learning strategies and development of competencies among students ($P < 0.027$) ($R = 0.139^*$). Lastly, findings on hypothesis three showed that there is a significant relationship between assessment and evaluation of learning and development of competencies among students ($P < 0.000$) ($R = 0.525^{**}$).

Recommendations: Based on these findings, it was recommended that there is need for bias towards action, a competence-based curriculum, and respect of format, frequency and feedback for assessment and evaluation. Additionally, Universities should adopt the SDL model as a learning strategy and develop strategies to overcome obstacles that hinder its application, as well as train teachers on the didactics of the blended learning model.

Keywords: *Self-directed learning, problem identification, learning strategies, learning assessment, competencies.*

Introduction

The most foundational definition of self-directed learning (SDL) comes from Malcolm Shepherd Knowles. Malcolm described SDL as a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning. Learners also choose and implement appropriate learning strategies, and evaluating learning outcomes (Brandt, 2021; Saks & Leijen, 2014). The high relevance of SDL in today's educational discourse suggests that the term is precisely defined and used in literature. However, authors in the likes of Benson (2011) and (Ng, 2008) point out that the concept of SDL is intangible and ambiguous. Many similar terms like self-regulated learning, autonomous learning, self-planned learning, self-teaching, and independent study are used in the same meaning and context, and the differences between them are often subtle and inconsistent which has caused them being used interchangeably by many researchers (Saks et al., 2014). This has triggered the present study to investigate the relationship between SDL and development of competencies among students. People can learn lots of things on their own efforts from different sources, especially through the internet and social media (Blaschke, 2014; Malison & Thammakoranonta, 2018). Such learning channels have an impact on the curriculum decision-making process (Siriwongs, 2015) and the development of competencies among learners.

Competence, in its broadest meaning, can be defined as the developmental capacity to interactively mobilize and ethically use information, data, knowledge, skills, values, attitudes, and technology to engage effectively and act across diverse 21st century contexts to attain individual, collective, and global good (Marope et al., 2017). The definition of competence by these authors recognizes that it is no longer sufficient to enable learners to acquire discrete knowledge, skills, and values. What learners learn is necessary but no longer sufficient. What is most critical is how they can apply what they learned across fast-changing, unpredictable, and even disruptive contexts of the 21st century. Hence, curricula need to focus on competencies that prepare learners for an unknown future in order to make them futuristic.

The integration of SDL in the teaching-learning process can act as a useful strategy to enhance learners' competencies and motivates them to engage in learning activities both inside and outside the classroom, because they can take the responsibility for what lessons to learn and what problems to solve in real life situations; they are able to choose, plan, manage, and evaluate their learning activities which can be carried out at any place and at any time (Moradi, 2018). Hence, SDL gives learners a greater role in their learning process. However, given the importance of SDL in the development of competencies among University students in Cameroon, there is need for a shift in paradigm from teachability to learnability and from a transmission to transaction view of learning (Tchombe, 2001). Hence, this calls for reciprocal determinism between the learner and the teacher whereby the learner is an active participant who initiates and directs his or her own learning process under the guidance of the teacher (Tchombe, 2019).

Review of Related Literature

Conceptual Review

Contextual Teaching and Learning

Contextual teaching and learning (CTL) is a student-centered learning strategy that emphasizes students' interests and experiences (Satriani et al., 2012). Berns and Erickson (2001), as cited in Khaefiatunnisa (2015), put forward a definition of CTL from a study conducted by the Office of Vocational and Adult Education as a conception of teaching and learning that helps teachers relate subject matter content to real world situations; and motivates students to make connections between knowledge and its applications to their lives as family members, citizens, and workers and engage in the hard work that learning requires (p. 83). Educators frequently refer to learning that is related to a context as “situated or anchored cognition” (Henning, 2004). Advocates of CTL recommend the presentation of problems in situations that are realistic to learners and common to everyday applications of knowledge.

Principles of Contextual Teaching and Learning

There are seven principles of CTL, which a teacher needs to apply in a classroom. These principles are: constructivism, inquiry, questioning, learning community, modeling, reflection, and authentic assessment (Rosa et al., 2019; Ruhimat, 2012). Constructivism promotes meaningful learning which can help students put the material they have learned in their long-term memory. Brown (2001), as cited in Khaefiatunnisa (2015) observed that “meaningful learning subsumes new information into existing structures and memory system, and the resulting association links create stronger retention” (p. 56). Inquiry encourages students to develop knowledge based on their own experience. It also helps them to develop their creativity and critical thinking. Questioning is a teaching skill that greatly enhances the teaching-learning process. For instance, it arouses students' curiosity, and helps the teacher gain students' attention. Learning community encourages students to work cooperatively with others and share their knowledge. In learning community, students can learn how to work in team, how to interact with others, and can get information from the community, inside and outside class, such as family or society. Modeling provides a model or an example that can be observed and imitated by every student to help them acquire specific skills or knowledge (Rosa et al., 2019). Reflection guides students to apply their knowledge, attitude, and skill in real-life situations (Sears, 2003). Authentic assessment is conducted during and at the end of the learning process. It shows the teacher how much academic material the students know and what they are able to do (Ruhimat, 2012).

Blended Learning

Blended learning (BL) refers to the use of a combination of instructional delivery approaches such as face-to-face mode, online learning mode, and self-directed learning mode (Kibinkiri, 2019). Blended learning derives its meaning from the concept of e-learning. E-learning is the systematic use of networked information and communication technology in teaching and learning (Naidu, 2003). Face-to-face learning mode refers to a teaching-learning process in which students are in the classroom on seat with the teacher. It is also called on-campus delivery mode. The teacher can bring internet sites of relevance and interest into the classroom. Students

can also access topics or course materials using multimedia technologies, but do not replace traditional teaching methodologies (Kibinkiri, 2019). On-line learning mode or delivery, popularly known as E-learning, is a field of education that focuses on teaching methods and technology with the aim of delivering teaching, often on an individual basis, to students who are not physically present in a traditional educational setting, such as a classroom (Subrahmanyam & Ravichandran, 2013). Modern educational technologies and online learning resources have a significant potential in supporting autonomous and SDL (Moradi, 2018; Malison et al., 2018). Self-learning mode (SLM), which is synonymous to SDL, refers to a process in which the learner, with or without the help of others, identifies learning needs, defines learning goals, develops and implement a learning plan and evaluates the learning gained (Knowles, 1975, as cited by Guglielmino & Guglielmino, 2003).

Theoretical Review

Vygotsky’s Social Constructivism Theory (1978)

The proponent of Social Constructivism Theory (SCT) is Lev Vygotsky. Vygotsky argues that learning and development do not materialize in predetermined stages, nor does the individual needs to adapt to and/or approach the process alone. To him, learning is a collaborative activity wherein the environment influences the individual, and learning propels development (Secore, 2017). Hence, SCT emphasizes the central idea that learning and development is a social, collaborative activity (Vygotsky, 1978). This is in contrast to Jean Piaget who focused on cognitive development as an individual process. The teacher in Vygotsky’s theory, serves as a facilitator and guide rather than a director and builder of learning (Kibinkiri, 2014). The relationship between SCT and identification of learning problems is shown on table 1.

Table 1: Relationship between SCT and the identification of learning problems

Concepts of SCT	Identification of Learning Problems
Social interaction	Social interaction enables learners to identify learning problems through active involvement, interdependence, and collaboration with peers, which empowers them to develop higher-order cognitive, self-management, psychosocial, and interpersonal skills.
The more knowledgeable other	Parents, teachers and fellow peers, and the culture that surrounds learners are considered as more knowledgeable others. They assist and encourage students to master concepts and ideas they cannot understand on their own, during the identification of learning problems.
The zone of proximal development	Teachers, peers and members of the learner’s community provide guidance and assistance to students as they encounter learning problems. This enables students to understand concepts that they cannot know on their own.

Source: Developed by the researchers (2020) from Vygotsky’s SCT, 1978).

Cognitive Apprenticeship Theory (1989)

The term cognitive apprenticeship (CA) was first coined and articulated by Collins et al. (1989). They asserted that, “We propose an alternative model of instruction that is accessible within the framework of the typical American classroom. It is a model of instruction that goes back to apprenticeship but incorporates elements of schooling. We call this model "cognitive apprenticeship" (p. 453). Hence, CA is a theory of the process whereby a master with a specific skill teaches that skill to a learner or apprentice, with emphasis on cognitive rather than physical skills (Collins, 1988). The CA learning theory consists of four essential dimensions or features: content, method, sequencing, and sociology (Collins et al., 1991; Brown & Stefaniak, 2016). The four dimensions of CA are diagrammatically presented in figure 1.

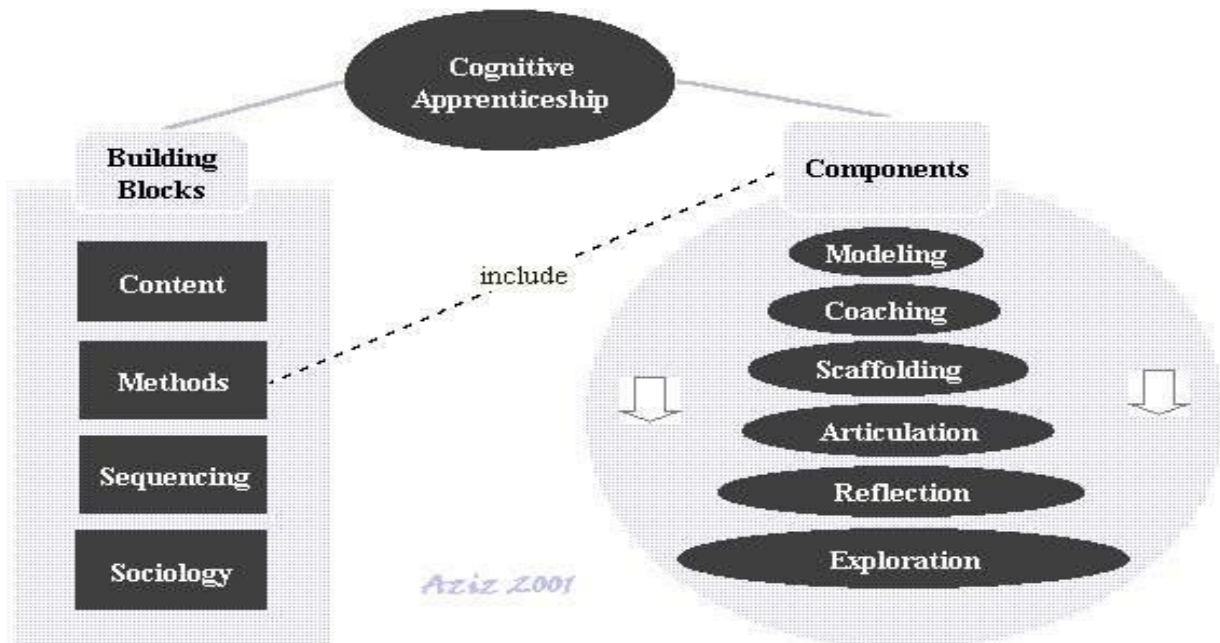


Figure 1: Outline of cognitive apprenticeship building blocks and components (Collins et al., 1989, 1991, as cited in Busi et al., 2019, p. 5).

The diagram above presents an outline of the building blocks and components of CA theory. Content deals with facts, domain knowledge, procedures and general applicable techniques for accomplishing a task and learning strategies. The methods or components consist of modeling, coaching, scaffolding, articulation, reflection, and exploration. Sequencing deals with the way learning activities are being ordered, and sociology deals here with learning social context where learners perform tasks, which is also known as the authentic context for task accomplishment (Collins et al., 1989, 1999, as cited in Busi et al., 2019). The relationship between cognitive apprenticeship theory and application of appropriate learning strategies is established in table 2.

Table 2: Relationship between cognitive apprenticeship theory and application of appropriate learning strategies

Methods/Models of CA	Application of appropriate learning strategies
Modeling	This goes with participatory learning whereby, children learned by observing what their parents, teachers or more knowledgeable were doing, explaining and demonstrating to them.
Coaching	The relationship here could be established with mastery learning where, children learned through the guidance of their parents, teachers or more knowledgeable during their learning activities.
Scaffolding	Here, the relationship could be established with lifelong learning perspective given that, assistance was given to children or adult whenever necessary to help them improve upon their knowledge and skills by the more knowledgeable.
Situated learning	Contextual teaching and learning correlates with situated learning in that, learning is related to the needs, interests and experiences of the learner and his community.
Intrinsic motivation	The correlation here could be established with lifelong and contextual teaching and learning. This is because, these learning activities motivate learners to make meaning out of the knowledge and skills they acquired to improve upon their own wellbeing and that of their communities.
Exploration	Hands-on-learning activities here gave the opportunity to learners to explore their competencies by accomplishing tasks and solving problems on their own when assigned by the more knowledgeable.

Source: Developed by the researchers (2020) from CA model for designing learning environments (Polo, 2015, p. 5).

Tchombe’s Mediated Mutual Reciprocity Theory (2019)

Mediated Mutual Reciprocity (MMR) is a theoretical perspective of learning processes by Therese Mungah Shalo Tchombe. The MMR theory considers the learner as an active transformer of ideas to create new knowledge. The transformative role of the learner is very central to the MMR theory (Tchombe, 2019). Unlike the social constructivist perspective of Vygotsky (1978) that emphasizes the role of the adult in leading a child through his/her ZPD, Tchombe’s MMR sees the child and adult as co-constructors of knowledge where the child has more responsibility in solving any problem. Hence, learning from the perspective of MMR is an unconditional give-and-take process with no hierarchy. One way of introducing learners to self-assessment, according to her, is through SDL activities related to problem-solving, learning, and assessment strategies because MMR supports the view that learning in the African cultural context is through experimentation, participation, observation, modeling, imitation, hand-on, and

collaboration. Table 3 establishes a relationship between the three learning processes of MMR theory and assessment and evaluation of learning.

Table 3: Relationship between MMR theory and assessment and evaluation of learning

Learning Processes of MMR Theory	Assessment and Evaluation of Learning
Mediation	Learner and significant other initiate learning as co-constructors of knowledge, which is central to peer and co-assessment.
Mutuality	Encourages and illustrates the active interdependence and collaboration of all in the interactive process.
Reciprocity	Encourages an unconditional give-and-take process with no hierarchy in the learning context, where the child and adult are important and equal partners in the learning game.

Source: Developed by the Researchers (2020) from the conceptual framework of MMR theory (Tchombe, 2019, p. 13).

Statement of the Problem

Education can foster the manpower requirements of a Nation by helping learners to develop their competencies, in terms of knowledge, skills, and attitudes, in order for them to become self-reliant. From observation, the teaching-learning process in The University of Bamenda is highly campus-oriented and lecture-based, characterized by lengthy classes that run up to Saturdays and Sundays, fewer assignments and/or tasks to students, dominant teaching role of lecturers, narrow mode of assessment and evaluation of learning that bases students' success on measured skills only in some particular intelligences, and too many courses with similar content knowledge. Consequently, students have limited time to practice, are unable to apply what they have learnt in order to solve real-life problems, have low degree of control over the learning process, are dependent and unable to direct their own learning without teacher support, are less interested, motivated, and willing to do relevant assignments, have difficulties to effectively assess and evaluate their own learning, have limited opportunities to experience the joy of discovery in learning, and are passive recipients of untested and disconnected ideas that give no direction to learning. The heavy workload challenge in the number of lessons and classes is contrary to Whitehead's (1929) two educational commandments: "Do not teach too many subjects," and again, "What you teach, teach thoroughly" (p.1). In view of all these, this study set out to investigate the relationship between self-directed learning (SDL) and development of competencies in students of The University of Bamenda.

Main Research Hypothesis

H₀: There is no significant relationship between SDL and development of competencies among students of The University of Bamenda.

Specific Research Hypotheses

H₀₁: There is no significant relationship between identification of learning problems and development of competencies among students of The University of Bamenda.

H₀₂: There is no significant relationship between application of appropriate learning strategies and development of competencies among students of The University of Bamenda.

H₀₃: There is no significant relationship between assessment and evaluation of learning and development of competencies among students of The University of Bamenda.

Research Methodology

This study made use of correlational survey research design with a quantitative approach. The area of the study was the main campus of the University of Bamenda (UBa). The population of the study comprised of 16,543 students distributed across the 12 Schools of UBa for the 2019/2020 academic year (Admission and Records Division, UBa, 2020). The target population comprised undergraduate and master's students, while the accessible population, from which the sample was drawn, constituted six Departments from six Schools of UBa. A sample sized of 254 respondents was obtained using both probability (simple random and stratified random) and non-probability (convenience and purposive) sampling techniques where appropriate. A 40 items closed-ended questionnaire was used to collect data. The instrument was validated through a pilot study involving 15 students of Higher Technical Teacher Training College (HTTTC) Bambili who were not part of the sample, with an overall reliability index which stood at 0.732. Data was analyzed using descriptive and inferential statistics. The Spearman Rho test was used to test the specific hypotheses of the study.

Presentation of Findings

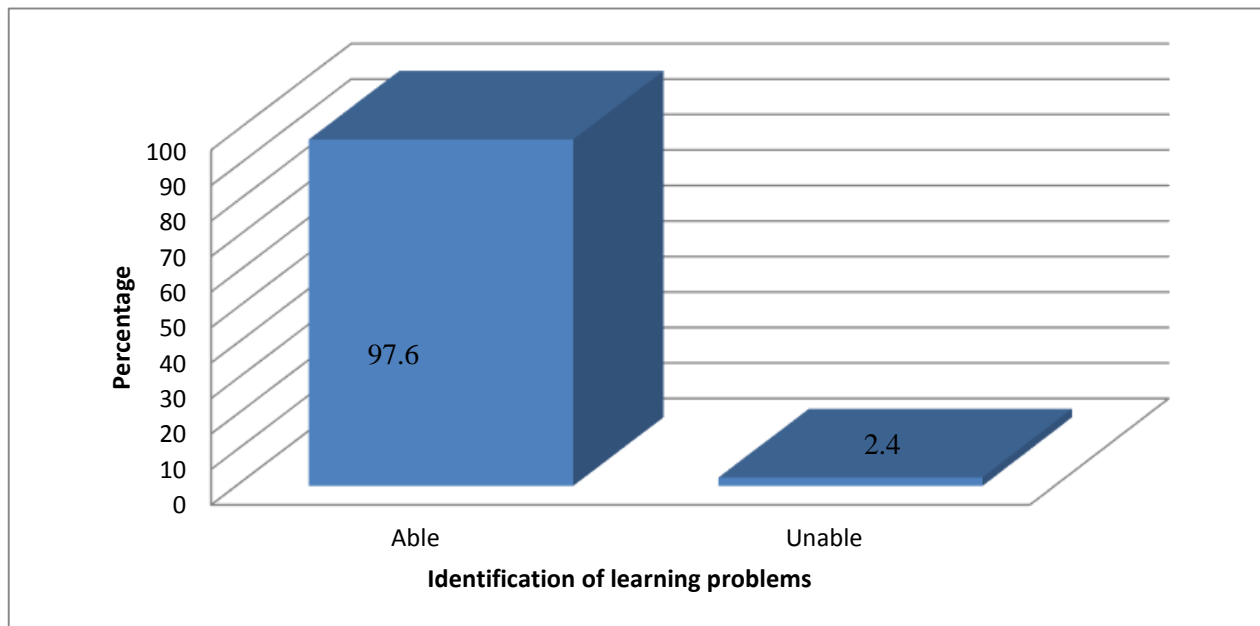


Figure 2: Appreciation of students' level of problems identification.

Verification of research hypothesis one (Ho1): There is no significant relationship between identification of learning problems and development of competencies in students of The University of Bamenda.

Table 4: Relationship between identification of learning problems and development of competencies

Correlation		Identification of learning problems	Development of competencies
Identification of learning problems	Spearman’s rho	1.000	.410**
	Correlation Coefficient		
	Sig. (2-tailed)		.000
	N	254	254
Development of competencies	Spearman’s rho	.410**	1.000
	Correlation Coefficient		
	Sig. (2-tailed)	.000	
	N	254	254

**Correlation is significant at the 0.01 level (2-tailed).

Source: Field survey, 2020

Statistically, there was a significant and positive relationship between identification of learning problems and development of competencies in students ($P\text{-value}=0.000 < 0.05$). The positive sign of the correlation value ($R=0.410^{**}$) implies that the development of competencies was more likely to increase when students identify their learning problems. Therefore, the null hypothesis which states that, there is no significant relationship between identification of learning problems and development of competencies in students was rejected and the alternative which states that, there is a significant relationship between identification of learning problems and development of competencies in students was retained.

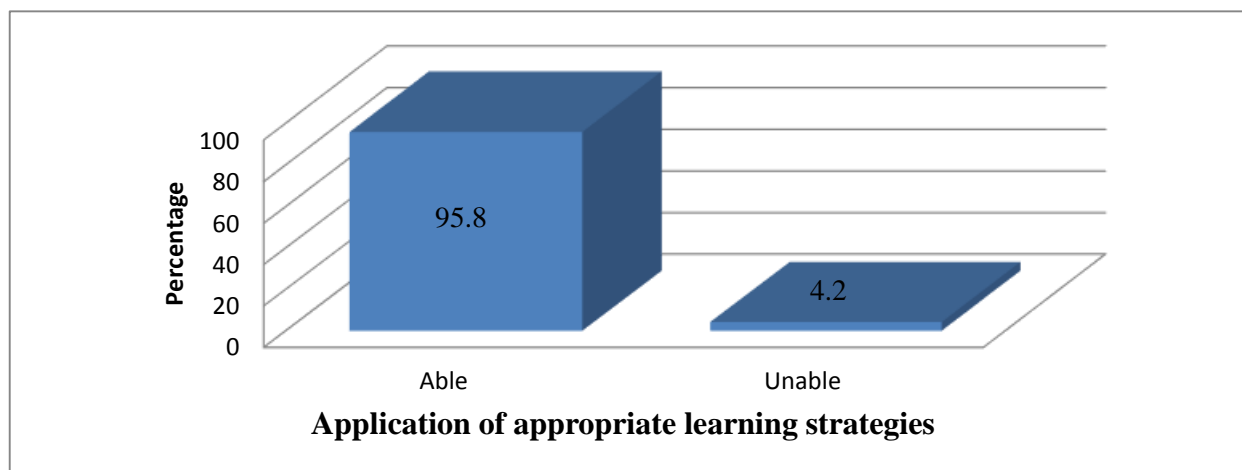


Figure 3: Appreciation of students’ level of application of appropriate learning strategies.

Verification of research hypothesis two (Ho2): There is no significant relationship between application of appropriate learning strategies and development of competencies in students of The University of Bamenda.

Table 5: Relationship between application of appropriate learning strategies and development of competencies

Correlation		Application of appropriate learning strategies	Development of competencies
Application of appropriate learning strategies	Spearman's rho	1.000	.139*
	Correlation Coefficient		
	Sig. (2-tailed)		.027
	N	254	254
Development of competencies	Spearman's rho	.139*	1.000
	Correlation Coefficient		
	Sig. (2-tailed)	.027	
	N	254	254

**Correlation is significant at the 0.01 level (2-tailed).

Source: Field survey, 2020

Statistically, there was a significant and positive relationship between application of appropriate learning strategies and development of competencies in students ($P\text{-value} = 0.027 < 0.05$). The positive sign of the correlation value ($R=0.139^*$) implies that the development of competencies were more likely to increase when students apply appropriate learning strategies in their environment. The null hypothesis which states that, there is no significant relationship between application of appropriate learning strategies and development of competencies in student was rejected and the alternative which states that, there is a significant and positive relationship between application of appropriate learning strategies and development of competencies in students was retained.

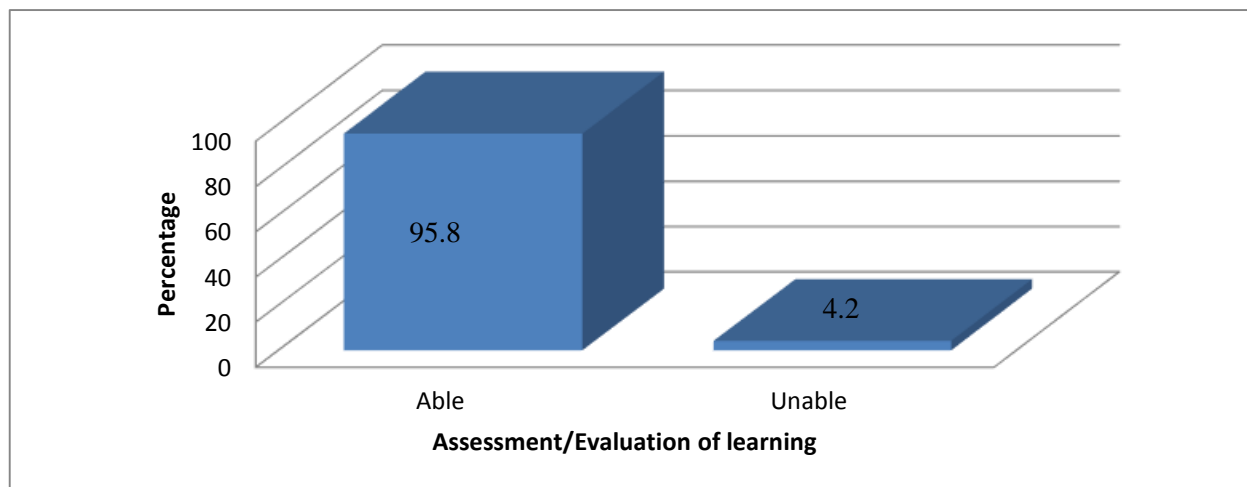


Figure 4: Appreciation of students' level of assessment/evaluation of learning.

Verification of research hypothesis three (Ho3): There is no significant relationship between assessment and evaluation of learning and development of competencies in students of The University of Bamenda.

Table 6: Relationship between assessment and evaluation of learning and development of competencies

Correlation		Assessment/evaluation of learning	Development of competencies
Identification of learning problems	Spearman's rho Correlation Coefficient	1.000	.525**
	Sig. (2-tailed)		.000
	N	254	254
Development of competencies	Spearman's rho Correlation Coefficient	.525**	1.000
	Sig. (2-tailed)	.000	
	N	254	254

**Correlation is significant at the 0.01 level (2-tailed).

Source: Field Survey, 2020

Statistically, there was a significant and positive relationship between assessment/evaluation of learning and development of competencies in students ($P\text{-value}=0.000 < 0.05$). The positive sign of the correlation value ($R=0.525^{**}$) implies that the development of competences were more likely to increase when students assess/evaluate their own learning. The null hypothesis which states that, there is no significant relationship between assessment/evaluation of learning and development of competencies in students was rejected and the alternative which states that, there is a significant relationship between assessment/evaluation of learning and development of competencies in students was retained.

Summary of Findings

Table 7: Summary of findings

Hypotheses	Statistical test	Comments
Hypothesis One (Ho₁): There is no significant relationship between identification of learning problems and development of competencies in students of the University of Bamenda.	Spearman's rho test	Statistically, there was a significant and positive relationship between identification of learning problems and development of competencies in students (P-value=0.000<0.05). The positive sign of the correlation value (R= 0.410**) implied that the development of competencies were more likely to increase when students identify their learning problems. The null hypothesis that there is no significant relationship between identification of learning problems and development of competencies in students was rejected and the alternative that there is a significant relationship between identification of learning problems and development of competencies in students retained.
Hypothesis Two (Ho₂): There is no significant relationship between application of appropriate learning strategies and development of competencies in students of the University of Bamenda.	Spearman's rho test	Statistically, there was a significant and positive relationship between application of appropriate learning strategies and development of competencies in students (P-value=0.027<0.05). The positive sign of the correlation value (R=0.139*) implied that the development of competencies were more likely to increase when students apply appropriate learning strategies in their environment. The null hypothesis that there is no significant relationship between application of appropriate learning strategies and development of competencies in students was rejected and the alternative that there is a significant relationship between application of appropriate learning strategies and development of competencies in students was retained.
Hypothesis Three (Ho₃): There is no significant relationship between assessment and evaluation of learning and development of competencies in students of the University of Bamenda.	Spearman's rho test	Statistically, there was a significant and positive relationship between assessment and evaluation of learning and development of competencies in students (P-value=0.000<0.05). The positive sign of the correlation value (R=0.525**) implied that the development of competencies were more likely to increase when students assess/evaluate their own learning. The null hypothesis that there is no significant relationship between assessment and evaluation of learning and development of competencies in students was rejected and the alternative that there is a significant relationship between assessment/evaluation of learning and development of competencies in students was retrained.

Source: Field survey, 2020

Discussion

Identification of Learning Problems and Development of Competencies in Students.

Statistically, findings showed that there was a significant and positive relationship between identification of learning problems and development of competencies in students. The positive sign of the correlation value implied that the development of competencies were more likely to increase when students adequately identified their learning problems. This is in congruence with the findings of Vizioli and Kaminsky (2017) who opined that problem identification, problem definition, problem solving strategy, organizing information, resources allocation, monitoring problem solving, and evaluating problem solving, improve students' creativity and ability on solving problems.

Application of Appropriate Learning Strategies and Development of Competencies in Students.

Statistically, there was a significant and positive relationship between application of appropriate learning strategies and development of competencies in students. The positive sign of the correlation value implied that the development of competencies were more likely to increase when students applied appropriate learning strategies in their environment. This is supported by the findings of Kibinkiri (2019) who stated that, the blended learning model influences the professional development of University students in Cameroon.

Assessment and Evaluation of Learning and Development of Competencies in Students.

Statistically, findings showed that there was a significant and positive relationship between assessment and evaluation of learning and development of competencies in students. The positive sign of the correlation value implied that the development of competences were more likely to increase when students assess and evaluate their own learning. This corroborates the findings of Tighe-Mooney et al. (2016) who asserted that peer assessment exercise is one of the most successful teaching and learning initiatives in terms of the extent of students' engagement with the exercise, the positive feedback from the students, and the level of improvement in a range of skills that the exercise generated.

Conclusion and Recommendations

The study concluded that adequate identification of learning problems, application of appropriate learning strategies, and assessment and evaluation of learning by students in their environment have significant positive effects on the development of their competencies. Based on the findings of this study and given that SDL is a new teaching and learning strategy in Cameroon, the following recommendations are made to universities:

- 1) Universities should adopt the SDL model as a learning strategy and develop strategies to overcome obstacles that hinder its application.
- 2) Teachers should be trained on the didactics of the blended learning model in order to do their job effectively.
- 3) There is need for bias towards action, a pedagogic approach of letting learners think independently and letting them provide answers to puzzles even if they make mistakes.

- 4) There is need for a competence-based curriculum that build students' self-confidence towards success in a task, while avoiding a negative self-fulfilling prophecy about learners.
- 5) The assessment and evaluation of students' learning should be carried out by teachers to consolidate the development of competencies among students bearing in mind the format, frequency, and feedback of assessment and evaluation.

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