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INVESTIGATING LIFELONG LEARNING COMPETENCIES OF TEACHER TRAINERS IN MYANMAR

DOCTORAL DISSERTATION

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ABSTRACT

Systematic literature review in lifelong learning identified that there are three common research trends: concepts used in lifelong learning policies, lifelong learning abilities, and influencing factors of lifelong learning and/or lifelong learning abilities. However, the number of previous studies that used mixed methods and were conducted in Asia is limited.

Thus, the main aim of this research is to explore the perceptions of teacher trainers on lifelong learning and their perceived level of lifelong learning competencies through the advanced mixed method;-explanatory sequential design. The participants in this study were teacher trainers from selected education degree colleges in Myanmar. The main instrument, LLLCS used in this study was developed based on the eight key competencies of lifelong learning identified by the European Commission, namely, Literacy competence, Multilingual competence, Mathematical competence and competence in Science, Learning to learn competence, Entrepreneurship competence and Cultural awareness and expression competence. Its reliability, face validity, content validity and construct validity were presented.

In the quantative part, multiple linear regression analysis was performed to formulate the regression models for lifelong learning competencies of teacher trainers, and analysis of variance was also utilized to create comparison between the outcome models. The results indicated that the model including region, teaching experience, perception of lifelong learning, and learning strategies may be the best regression model for predicting lifelong learning competencies in teacher trainers. In the quantitative part of the formal study, the relationships among the perception of lifelong learning, lifelong learning competencies, and learning strategies were investigated and each competency of lifelong learning was also analysed. The findings indicated the perception of teacher trainers of lifelong learning and lifelong learning competencies is high. The study found that perception of lifelong learning, competencies, and learning strategies did not differ based on gender, education level, or teaching tenure. However, significant differences were observed in perception of lifelong learning and learning strategies, but not lifelong learning competencies in terms of age. The study also found a highly positive correlation between lifelong learning competencies and learning strategies. Competencies were typically high in learning how to learn, but low in math and science. Competencies in multilingual, digital, learning to learn, citizenship, entrepreneurship, and cultural awareness varied by region of education degree colleges, but not literacy, mathematics, and science. Literacy competence, digital competence and citizenship competence can also differ by age while teaching service can influence only the digital competence.

By using a purposive sampling approach, semi-structured interviews were conducted in the qualitative phase. Their lifelong learning competencies, particularly in the areas of digital competence and multilingual competence, are affected both favourably and unfavourably by the new learning community. Most of them used self-regulated learning strategies to gain teaching competencies. They believed that teaching competencies are related to the lifelong learning competencies, which can also be influenced by various internal and external factors.

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ANOVA	analysis of variance
ASEAN	Association of Southeast Asian Nations
AVE	average variance extracted
CFA	Confirmatory factor analysis
CFI	comparative fit index
CiC	Citizenship competence
COVID	Coronavirus Disease
CR	composite reliability
CuC	Cultural awareness and expression competence
DiC	Digital competence.
ELLI	Effective Lifelong Learning Inventory
EnC	Entrepreneurship competence
ETWG	Education Thematic Working Group
EU	European Union
ICT	Information and Communication Technologies
IoEs	Institutes of Education
IRB	Institutional Review Board
JICA CREATE and Teacher Education	Japan International Cooperation Agency Curriculum Reform
JICA	Japan International Cooperation Agency
KG	Kindergarten
KMO	Kaiser–Meyer–Olkin
LiC	Literacy competence,
LLC	Learning to learn competence,
LLL	Lifelong Learning
LLLCS	Lifelong Learning Competencies Scale
MaSC	Mathematical competence and competence in science
MEG	Monastic Education Development Group
MLM	Maximum Likelihood Method
MLRA	Multiple linear regression analysis
MTEWG	Teacher Education Working Group
MuC	Multilingual competence

NLD	National League for Democracy
NUG	National Unity Government
OECD	Organization for Economic Cooperation and Development
OPM	Oxford Policy Management
PLE	personal learning environment
PPTT	Pre- service Primary Teaching Training
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RMSEA	root mean square error of approximation
SAC	State Administration Council
SICP-LLL	Interpersonal Predispositions for Lifelong Learning
SKCLLL	Scale of Key Competence for Lifelong Learning
SRMR	standardised root mean square residual
SUOE	Sagaing University of Education
TCSF	Teacher Competency Standards Framework
TLI	Tucker–Lewis index
TTCs	teacher training colleges
TTS	teacher training schools
UDNR	University of Development of National Races
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund
UoE	Universities of Education
VIF	Variance Inflation Factor
WoS	Web of Science
YUOE	Yangon University of Education

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1. INTRODUCTION

1.1. Conceptualization of Key Terms
1.1.1. Lifelong learning

A general definition of lifelong learning is learning that is continued throughout one's life and is flexible, diverse, and accessible at various times and locations. The European Lifelong Learning Initiative defines lifelong learning as "*a continuously supportive process which stimulates and empowers individuals to acquire all the knowledge, values, skills and understanding they will require throughout their lifetimes and to apply them with confidence, creativity and enjoyment, in all roles, circumstances, and environments*" (Watson, 2003). Lifelong learning promotes learning outside of regular schooling and throughout a career (Duță & Rafailă, 2014). Lifelong learning has been conceptualized in different dimensions: individual and institutionalized learning (Jarvis, 2012); formal learning, non-formal learning and informal learning (Divjak et al., 2004); community participation and engagement, personal education and empowerment and employability (Shrestha et al., 2008); personal, professional and political dimensions for teachers (Smith, 2015) and both horizontal and vertical integration— where learning activities are harmonized—invoke the need for ever-higher levels of education (Kálmán, 2016).

1.1.2. Lifelong Learning Competencies

Lifelong learning skills do not refer to the specific knowledge that the students acquire during their formal education process (Dong, 2004). It refers to acquiring knowledge and skills that they continue their own learning after the formal education process (Selvi, 2011). Dong (2004) described that lifelong learning skills include some sub-skills such as self-directed learning skills, ability of seeking out and access to knowledge, critical thinking skills, lateral thinking skills, communication skills, interpersonal skills, problem solving skills, ability of planning projects, ability of evaluating alternatives, ability of working in teams and ability of working collaboratively. Selvi (2011) mentioned that lifelong learning skills are the competencies of the individuals who apply these skills in their life process to gain new performance and follow all of the development related to their lives.

European Commission (2019) adopted eight main Competences for Lifelong Learning: Literacy, Multilingualism, Mathematics and Science, Digital, Learning to learn, Citizenship, Entrepreneurship and Cultural awareness. It has been attempted to promote teachers' active participation in lifetime learning while describing their competencies. Teaching profession was

redefined by the European Union, based on lifelong learning competencies of teachers, and these competencies refer both to the initial and continuing development of the teachers, as well as to the types of schools they should work in and qualities they should promote their students (Theodosopoulou, 2010). Selvi (2010) also supported it by the general framework of teacher competencies which comprised curriculum competencies, field competencies, research competencies, social-cultural competencies, emotional competencies, communication competencies, lifelong learning competencies, ICT competencies and environmental competencies.

1.1.3. New learning community

As of the present moment, there is no established definition of a new learning community. For the purposes of our study, an operational definition of a new learning community must be written. A new learning community is an environment where learners can share unique experiences with others from many alternatives, including universities, courses, and training programs, while also teaching and learning online.

1.2 Background to the study

According to the 2014 Census, the population of Myanmar is approximately 54 million. It is an ethnically and linguistically diverse nation with over 135 ethnic groups since it comprises seven States and seven Regions. It gained Independence from Britain in 1948 and was administered by the military from 1962 until 2011. Myanmar can be separated geographically into upper and lower regions. Lower Myanmar is the term for the southern coastal and delta region on the Bay of Bengal and Andaman Sea, whereas Upper Myanmar is the central and northern region of the country. This division was particularly apparent between 1852 and 1885(Britannica, 1998, 2008).

There was political change in Myanmar, a transition from military administration to democracy in 2010. Political change impacts various sectors such as the economy, education and healthcare. For example, the budget for education increased from 0.69 per cent to 8.4 per cent of GDP between 2011 and 2020. As a result of increased expenditure on education, education reforms can be conducted following the Comprehensive Education Sector Review (CESR). The coup in Myanmar changed the country's politics once more on February 1, 2021. The National Unity Government (NUG) was also formed by the ousted National League for Democracy (NLD) politicians, activists, and representatives from several ethnic minority

groups. This transition will have an unpredictable impact on Myanmar's education reforms, including higher and basic education.

Because of political unpredictability, Myanmar's GDP shrank, with the services and industrial sectors bearing the brunt of the decline. With a forecast for 2.0% growth in 2023, growth is anticipated to resume in 2022. Export growth is anticipated to be driven by the apparel manufacturing industry. With fewer foreign investment inflows than prior to the coup, fixed investment is expected to rise by 2.1% in Myanmar. The fiscal year 2022–2023 will see growth driven by exports, but trade in services will remain modest. The devaluation of Myanmar's kyat, tighter US monetary policy, and high global energy and commodity prices all contribute to inflation (OECD, 2023).

According to the Southeast Asia 2023 Survey Report, Myanmar's facing the widening of socio-economic gaps and rising income disparity is increased to 47% in 2023 (Seah et al., 2023). As parents move to cities in search of better employment, healthcare, and educational opportunities, urbanisation is becoming more and more significant (Kraas et al., 2017). The demographic distribution by region for all levels of qualification reveals a complex picture. There is a notable bipolarity of qualification levels in the central lowlands, especially in Mandalay and Yangon, where high percentages of people have only completed primary school and low percentages have completed high school or other higher education. The population in a developing country has an average literacy rate of 89.5%, with regional differences, such as Yangon's rate of 96.6% compared to Shan State's 64.6%. The nation's universities, colleges, and degree programmes are spread throughout the various regions, and every single state has a minimum of one public university or college. In remote regions of the nation like Hakha/Chin State, new colleges and universities are being founded. However, higher education is dominated by Mandalay and Yangon, which offer teacher training through a number of education colleges across the nation (Kraas et al., 2017).

Looking back to the history of Education in Myanmar, it can be divided into four periods: before Independence, after Independence, under Military Rule and during the democratic transition (Lwin, 2000). It reports how teacher education cooperates with the basic education in curriculum reform within the democratic period. It provides an overview of teacher education, basic education, curriculum reforms in Myanmar, and teacher education's role in the curriculum reform of basic education.

1.2.1 Teacher Education in Myanmar

Before Independence, it can be suggested that there was pre-service teacher training. Yangon University, which was founded in 1920, provided a teaching diploma for high school teachers. A faculty of education was set up in Yangon University in 1922, and the first teacher training college was in 1931 (Lall, 2020). However, Myanmar lacked a coherent teacher education policy before the 2012 education reforms. As a result, there was no pre-service or in-service teacher education structure and no professional standards for the many education stakeholders to meet. During the British independence period, there was no document about teacher education. Therefore, it can be said that there was no teacher training at the start of the military rule. There was no pre-service training and little investment in education between 1978/9 and 1997/8. As a result, new teachers were required to have a bachelor's degree, but no prior teaching experience or training was required (UNESCO, 2016).

According to Lwin (2000), a lack of qualified teachers impacts the quality of instruction. People who have just passed the Basic Education High School examinations are authorized to teach primary grades in some regions where there are few university graduates. These novice teachers join the classroom with no prior teaching experience. After several years of teaching, some teachers get training. The regime introduced pre-service and in-service teacher training after years of neglecting the teaching profession. According to a Japan International Cooperation Agency (JICA) report, pre-service teacher training ceased in 1971. However, it was reinstated in 1998 when five teacher training colleges (TTCs) and 14 teacher training schools (TTS) were upgraded to education colleges (JICA, 2013). As a result, the system overhauled today has remained untouched for the past 20 years.

At the time of writing, Teacher education in Myanmar is delivered through three types of institutions under the supervision of the Ministry of Education. Two Universities of Education (UoE) provide a five- year degree (B.Ed.) qualifying teachers to teach secondary school. These were upgraded from Institutes of Education (IoEs) in early 2015 in keeping with international trends. The fifth-year was recently added to include a year of research. In addition, the one University of Development of National Races (UDNR) provides free teacher training specifically to ethnic minorities.

There are 25 Education Degree Colleges which provides diploma-level course known as D.TED course and Pre- service Primary Teaching Training (PPTT) course to produce qualified teachers to teach in primary and middle schools. Student teachers must have graduated with

matriculation from upper secondary school to join a two-year D.TED course. This course allows teachers to teach at the middle school level, although they will start as primary assistant teachers when they graduate. Primary Teaching Training (PPTT) course, which takes four months, is provided for graduates to become primary teachers. These were also upgraded into education degree colleges in the 2020-2021 academic year, which provides the four-year courses for either BA (Education) or BSc (Education). However, it remains unclear to distinguish between the Art stream and the Science stream. Under this system, if teachers wanted to become secondary school teachers or move on to administrative posts in education, they needed a Bachelor of Education degree that could be acquired at the University of Education in Yangon or Sagaing, for those in Lower and Upper Myanmar, respectively (Lall, 2020).

In addition to these institutions, other organizations support teacher education. The Education Thematic Working Group (ETWG) has established a sub-group in Myanmar known as the Teacher Education Working Group (MTEWG). It was formed on May 3 2013, with the lead from UNICEF and support from the British Council in response to the needs of teachers in Myanmar. The Monastic Education Development Group (MEG) was established in 2011 to improve monastic education quality. One of its missions is to support teacher education, one of the monastic networks' primary tasks. Teachers in monastic schools are taught as trainers, who then train the teachers in their school, and then the teachers in the associated schools, according to the cascading technique of a variety of training providers.

1.2.3. Basic Education System in Myanmar

Lwin (2000) reported the education of Myanmar within the historical context. Before Independence, there were three types of schools in Burma:

1. Vernacular School in which the medium of instruction was Burmese or one of the recognized indigenous languages;
2. Anglo-Vernacular School in which English was taught as a second language and the media of instruction were English and Burmese or one of the recognized indigenous languages;
3. English School in which the medium of instruction was English, with Burmese as the second language.

After Independence, the organization of the school system in the new education plan was a 5-3-3 system that consisted of:

1. Nursery School for children;
2. Primary School for children;
3. Middle School for children;
4. High School including Agriculture and Technical High Schools for children and;
5. Vocational and Technical Institutes and universities for young people.

In 1964, the system of education was reorganized under military rule. The structure of the New System of Education comprised: (a) Basic Education; (b) Technical, Agricultural and Vocational Education; and (c) Higher education. In the Basic Education, school structure was changed from a 5-3-3 to a 5-4-2 system that consisted of Primary School, Middle School and High School. Kindergarten (KG) was renamed Grade 1 in this system, and since then, KG has been used for severe teaching and learning rather than singing and playing, as is the case in most other countries. Even though the pupils are only five years old, the former Standard 1 syllabus is taught in KG. Therefore, it is possible to say that academic standards in Myanmar are a year ahead of the internationally recognized age norm (Soe et al., 2017).

By the Thirty-Year Long-Term Education Development Plan (FY2001-02 – FY 2030-31), the most significant education reform during the wave of democratization has been the alteration of the basic education structure. The former education structure (5-4-2) (grades 1 to 5 for primary level, grades 6 to 9 for lower secondary level, and grades 10 to 11 for upper secondary level) was modified into the KG+ 12 (5-4-3) structure in order to adhere to the basic education structure of other ASEAN countries. Thus, kindergarten, five years of primary schooling, four years of lower secondary schooling, and three years of upper secondary schooling make up the new basic education system KG+12 (5-4-3). The new KG class for five-year-olds began in the 2015-2016 academic year, with a new curriculum.

1.2.4. Education reform: curriculum reform
As the education system was changed to meet international standards, basic education and teacher education curriculum were upgraded. However, before the National Education Law was set up, there was no curriculum framework in primary education and teacher education.

In the previous education of Myanmar that has progressed from the old monastic education to the current modern education, there has never been a curriculum framework. However, syllabi, textbooks, teacher's guides with different teaching methods and various assessment forms were designed and used. Therefore, the Myanmar Ministry of Education is now implementing the educational reforms by setting the curriculum framework with the direction

of the National Education Law (Soe et al., 2017). In the National Education Law, chapter 1, section 2 (n), curriculum framework is defined as "the systematic written programs for all fields in formal and non-formal education, which are designed to achieve educational objectives and which include learning outcomes, contents, instructional methods and evaluation".

1.2.5. Basic Education Curriculum Framework

According to the Myanmar National Curriculum Framework (Ministry of Education, 2015), writing and implementing a curriculum framework for primary education mainly focuses on achieving basic education aims and thirteen guiding principles to realize these aims. The aims of the basic education curriculum are as follows:

After the completion of basic education, students will be able to:

- attend the school until the completion of basic education;
- develop "union spirit" and appreciate, maintain, and disseminate languages and pieces of
- literature, cultures, arts and traditional customs of all national groups;
- become good citizens with well-developed five strengths, including critical thinking skills,
- communication skills and social skills;
- apply they are civic and democratic in daily lives and abide by laws;
- be competent for Myanmar language, which is the official language of the Republic of the Union of Myanmar, and develop their skills in respective ethnic language and English;
- develop foundational knowledge and skills for higher learning and technical and vocational educations;
- develop sound body and sportsmanship through participation in physical education activities and school health activities, and apply health knowledge in daily lives;
- appreciate and maintain the natural environment and materialize its sustainability;
- become global citizens with awareness and appreciation of human diversity and abilities to practice basic knowledge of peace in their daily lives;
- take pride in being a citizen of the Union of Myanmar.

Basic education curriculum is vital for children and youth in any country because it meets their physical, intellectual, linguistic, emotional, and social needs. As a result, the primary goal of basic education curriculum reform is to establish a new curriculum that focuses on crucial

21st-century knowledge and abilities and attempts to address the shortcomings and flaws of the previous curriculum (Htet, 2020).

In May 2015, a series of curriculum frameworks were approved for the four levels of basic education (pre- primary, called kindergarten, primary, middle and high school). This provides an important foundational document outlining the expected learning objectives and outcomes for Basic Education. For each level, the frameworks describe the aims, curriculum structure, the inclusion of local curricula, the age-appropriate teaching and learning approaches, and the relevant types of assessment (UNESCO, 2016).

According to the age and developmental stage of kindergarten students, the curriculum structure consists of six learning areas: (1) Wellbeing, (2) Moral, Social, and Emotional Development, (3) Communication, (4) Recognition of the Arts and Creativity, (5) Exploring Mathematics, and (6) Knowledge and Understanding of the World. The new kindergarten curriculum differs from the previous subject-based curriculum. It will ensure that kindergarteners comprehend the entire universe and how to behave appropriately in society through a teaching strategy that incorporates music, dance, poems, games, and storytelling.

This is the most effective technique to make learning more enjoyable for these young children. Learning areas which are (1) Myanmar, (2) English, (3) Mathematics, (4) Science, (5) Social Studies, (6) Physical Education, (7) Life Skills, (8) Moral and Civics, (9) Aesthetics (Music & Art), and (10) Local Curriculum make up the primary school curriculum. The middle school curriculum is divided into eleven learning areas, which are compulsory for all learners. These areas are (1) Myanmar, (2) English, (3) Mathematics, (4) Science, (5) Social Study (Geography), (6) Social Study (History), (7) Physical Education, (7) Life Skills, (8) Moral and Civics, (9) Aesthetics (Music & Art), and (10) Local Curriculum. There are two streams of twelve study areas at the high school level. Science and Art are the two streams from which students can select. The high school Science Stream curriculum includes 11 areas of study that all students must complete and three art- based social studies courses from which students can choose one. These learning areas are (1) Myanmar, (2) English, (3) Mathematics, (4) Physics, (5) Chemistry, (6) Biology, (7) Physical Education, (8) Life Skills, (9) Moral and Civics, (10) Aesthetics (Music and Art), (11) Local Curriculum and (12) one elective from Social Studies (Geography), Social Studies (History), and Social Studies (Economics). On the other hand, the high school Art Stream comprises 11 learning areas plus two science-based subjects and Optional Myanmar, of which the students can select one. These areas are (1) Myanmar, (2)

English, (3) Business Mathematics, (4) Social Studies (Geography), (5) Social Studies (History), (6) Social Studies (Economics), (7) Physical Education, (8) Life Skills, (9) Moral and Civics, (10) Aesthetics (Music and Art), (11) Local Curriculum and (12) one elective from Physics (Integrated Physics and Chemistry), Biology (Integrated Biology and Chemistry) and Optional Myanmar. 21st Century Skills for the job opportunity and personal development are specifically organized to be taught with some contents depending on the locality, according to the new curriculum.

1.2.6. Teacher Education Curriculum Framework

Although a few modifications were introduced in the Education College Curriculum in the last 18 years, it dated back to 1998 because the fundamentals of structure, content and delivery model remained in place (Lall, 2020). There were a variety of reasons to make the teacher education curriculum framework update. Firstly, it needs to be relevant to the structure of a four-year education degree college. The second one is that it needs to align directly with the basic education curriculum framework and reflect the exact expectations, subject areas and methodologies. Basic education teachers are now required to undertake pre-service and in-service training to familiarize themselves with new curricula and teaching methodology. Lall (2020) described that the teacher education curriculum requires new content to link with the new basic education curriculum. A new curriculum for four-year degree colleges is being developed by technical experts, including education colleges' teacher educators, and coordinated through UNESCO's 'Strengthening Pre-Service Teacher Education.

Teacher Competency Standards Framework (TCSF) forms the basis for all teacher education across the different institutions, qualifications and stages (both pre-service and in-service). The framework should be used as the basis of the curriculum framework as it provides a clear description of the learning outcomes of a teacher-training course. It should be used to inform the design of the content structure, the methodologies and most importantly, how the student teachers are assessed (UNESCO, 2016). Therefore, upgrading the teacher education curriculum framework was based on the Teacher Competency Standards Framework, which comprises four domains: professional knowledge and understanding; professional skills and practices; professional values and dispositions; professional growth and development (Dabrowski et al., 2020). The first-year curriculum was introduced in December 2019. The next-year curricula are still in the process, and it takes more time than planned because of the pandemic.

1.2.7. Role of Teacher Education in implementation of Basic Education curriculum

In implementing the new basic education curriculum, teachers cooperate with basic education departments and the JICA CREATE project. Education degree colleges are responsible for the primary and middle curriculum of basic education. At the same time, the Yangon University of Education (YUOE) and the Sagaing University of Education (SUOE) have the responsibility to implement the upper secondary curriculum.

In preparation for the introduction of the new curriculum (KG, Grade1, Grade 2, Grade 3 and Grade 6), the Ministry of Education conducted workshops and training for teacher trainers from education colleges and education officers from townships, districts and states/ regions, as well as ministerial officials from the concerned departments at the central level. Following this, nationwide in-service teacher training and pre-service teacher training were conducted to introduce the new curriculum. Teacher trainers facilitated in-service teacher training for teachers, including all primary and middle teachers from all schools, including monastic schools, private schools, and other schools that used the government curriculum (JICA, 2017).

In pre-service teacher training, student teachers attend the D.TED course and Pre-service Primary Teaching Training (PPTT) course in the education colleges. Concerning the training for the high school new curriculum, there is no valid information, documents or practices. It is not implemented in the basic education schools at the time of writing because of the pandemic. Therefore, there is still weakness regarding the training for the new curriculum of basic education. The JICA report states that teachers have encountered several challenges in implementing the new curriculum. These included insufficient time to prepare the lessons, teaching subjects they had no training in – such as performing arts, especially playing the flute and singing songs in front of their students, and visual arts because teachers by themselves are sometimes poor in drawing and painting.

According to the Oxford Policy Management (OPM) team, teachers are concerned because they do not believe they have the pedagogical abilities to implement the new method. Teachers claimed that the training sessions were too short and did not help them teach the new topic or educate in a more child- centred approach, mainly when they had a big class size. They required further training in order to teach the new curriculum courses effectively. Due to a lack of familiarity with the new method, they could not conduct classroom assessments on individual learners. Trained skills and experiences for Grade 3 and Grade 6 teachers are confined to two-

week assignment/project work; thus, teachers cannot apply them effectively in classroom practices.

Following the coup, the military regime attempted to reopen previously closed schools due to the outbreak of the Coronavirus epidemic. On May 5, under the direction of the State Administration Council (SAC), the Ministry of Education reopened final-year, master's, and PhD courses in higher education. On June 1, all basic education schools were ordered to reopen. Generally, all teacher training institutions across the country reopen with half of the teacher trainers and half of the student teachers attending the schools because another half had participated in the Civil Disobedience Movement. Basic Education Schools were likewise plagued by a shortage of teachers. Because of the third wave of the pandemic, basic education institutions were reopened after a few weeks. Currently, no new curriculum is implemented in junta- controlled schools. The National Unity Government has prepared a parallel basic education system for students who boycott junta-controlled schools. The NUG's Ministry of Education announced that a new curriculum that supports federal democracy is being developed.

During democracy, the Ministry of Education Myanmar, is doing education reforms by implementing curriculum reform in both teacher education and basic education. Although teacher education, including three institutions, cooperates with basic education in the implementation of the new curriculum, it found that there are still few weaknesses in the implementation of the new curriculum of basic education. Soe et al. (2017) recommended that the new curriculum will fulfil local needs and circumstances and discourage the practice of rote-learning, and will ensure that students grow as independent thinkers with their sense of creativity. Whether the new curriculum in basic education can be implemented remains in question in this political situation. For the future generations of Myanmar students, humanitarian aid from the international community should continue to support curriculum improvements.

1.3. Significance of this study

Conducting this research is imperative, addressing the specific needs within the context of Myanmar and addressing existing gaps within the field of lifelong learning research. In Southeast Asia, the COVID-19 pandemic has had a major effect on learning for adults, especially in Myanmar. The provision and evaluation of work-based learning programmes has grown increasingly difficult from a distance, and adult learning—especially non-formal

education and informal learning at work—has suffered. The advancement of technology has resulted in a rapid rise in digital solutions across multiple domains of society, such as employment and social interactions. It is essential for people to acquire a wide range of knowledge, abilities, and attitudes in order to be capable employees and involved citizens. Southeast Asian nations have the ability to rise to the occasion and change the world for the better. Adults in the majority of Southeast Asian nations have relatively limited access to formal education; less than 25% of organisations offer formal training to their employees. Unfortunately, Myanmar lacks the data necessary to determine these indicators, such as relevant skill development, effective skill utilisation, or skill system governance (OECD, 2021).

In the meantime, reforms have been implemented across the board in Myanmar's educational system. Improving teacher quality has become crucial, and the Ministry of Education has organized programs for professional development with the assistance of regional and international organizations. The need for qualified teachers in Myanmar who have a teaching certificate, and evidence of subject area proficiency is one of the biggest difficulties facing teacher education. The United Nations' fourth Sustainable Development Goal is to "*ensure inclusive and equitable quality education and promote opportunities for lifelong learning for all*." With regard to quality education, increase the number of qualified teachers available by 2030, mainly through international collaboration for teacher education in underdeveloped countries (United Nations: Department of Economic and Social Affairs, 2022).

To be able to generate qualified teachers, it is also crucial to support teacher trainers' lifelong learning first. According to Teachers' Competency Standard Framework, it promotes the importance of all teachers being conscious of their position as leaders within the community and emphasizes the need for active research to support teachers' classroom success and continuing professional growth. Education Degree Colleges and Education Universities should be ideal ones that can transform into lifelong learning institutions and should have the mission and vision for this. UNESCO Institute for Lifelong Learning (2022) established a guide to transformation for formal education institutions, with a focus on staff development and learning space organisation, in order to help them become lifelong learning institutions. Informal lifelong learning can be addressed in a variety of non-formal learning environments, such as study groups, libraries, adult learning centres, community learning centres, and within families.

Only teacher professional development in Myanmar (Borg et al., 2018; Htut et al., 2022; Keczer & Myint Lay, 2020; Thant Sin, 2021; Thwe, W. P., & Kálmán, 2022) has been studied from the angle of conducting research. In international research studies, professional development of teachers is viewed as a continuous process that underlies the lifelong learning concept. There are considerable related researches concerning lifelong learning in teacher education (Buza et al., 2010; Karataş et al., 2021; Matsumoto-Royo et al., 2022; Simmons & Walker, 2013; Yildiz-Durak et al., 2020). In this direction, we are interested in how we can transform professional development into lifelong learning in Myanmar. It is proposed that alternative education program introduce lifelong learning as part of their mandate (Yorozu, 2017), as stipulated in the National Education Law (2014) which establishes that education is based on the right to schooling and lifelong learning for all citizens. As of yet, neither a strategic plan nor scientific research can guide the stakeholders in Myanmar to implement lifelong learning. This research will explore the perceptions of teacher trainers on lifelong learning and their perceived level of lifelong learning competencies. Hopefully, it will provide scientific information that can be used by policymakers, educators, and future lifelong learning leaders to design and implement strategies.

Toward this goal, a systematic literature review of lifelong learning in educational settings (Thwe, W. P., & Kálmán, 2023) was conducted, which is detailed in the next chapter. According to this review, the research gaps in lifelong learning research include the need for a more comprehensive set of variables, a broader application of research methods, increased representation of diverse participants, a focus on all stakeholders in education, addressing geographical imbalances, and adapting research to the changing educational landscape influenced by events such as the COVID-19 pandemic. Both these research gaps and Myanmar context led to the overall research questions for this study, which are:

1. What are the perceptions of teacher trainers of the concept of lifelong learning in Myanmar?

2. Are there any significant differences in the lifelong learning competencies of teacher trainers according to their background factors?

3. What are the factors that promote or hinder the lifelong learning competencies of teacher trainers in Myanmar?

4. What learning strategies do they use to improve their teacher competencies?

5. How can lifelong learning of teacher trainers influence their new learning community in Myanmar?

1.4. Structure of the dissertation

This dissertation is comprised of a total of seven chapters. Research question 1, and 2 are addressed in the quantitative parts which are described in the fifth Chapter. Research question 3, 4, and 5 are addressed qualitatively and described in sixth Chapter.

The present chapter introduces a comprehensive overview of the research project. The chapter begins with the conceptualization of the key terms. Our study's context was published in the Opus et Educatio, a peer-reviewed journal with the title "Continuous Professional Development for Teacher Educator Development in Myanmar Education Colleges". This is followed by the general significance of the study, the purpose and the main research questions.

The second Chapter presented the systematic literature review on lifelong learning in the educational setting. It aimed to provide updated information on lifelong learning in educational research by examining theoretical documents and empirical papers from 2000 to 2022. This literature review sought to identify concepts, theories, and research trends and methods linked to lifelong learning in educational research in different countries. It has been already published in Asia Pacific Education Researcher.

The third Chapter presented the methodology of the research. It explained research design and procedure, instruments, participants and data analysis.

The fourth Chapter discusses the pilot study, underpinning the review of the previous research tools to measure the lifelong learning competencies, the reasons of developing the primary questionnaire used in this dissertation, Lifelong Learning Competencies Scale and its reliability and validity. "The Lifelong Learning Competencies Scale for teacher trainers: Creating and validating the instrument in the Myanmar context" is name of the paper, which has been submitted as the first revision to the Heliyon journal.

The fifth Chapter includes two quantitative studies: Regression Models of and Relationships Among the Perception of Lifelong Learning, Lifelong Learning Competencies, and Learning Strategies of Teacher Trainers in Myanmar. The first one studied the various models of lifelong learning competencies, based on the perception on lifelong learning, learning strategies and the background factors of teacher trainers and chose the most

appropriate model for this study. The article related to this study titled "The Regression Models of Lifelong Learning Competencies for the Teacher Trainers" is already published in Heliyon journal. The second qualitative study reports about the perception on lifelong learning, lifelong learning competencies and learning strategies and how they differ according to the background factors of teacher trainers. This study entitles "Relationships Among the Perception of Lifelong Learning, Lifelong Learning Competencies, and Learning Strategies of Teacher Trainers in Myanmar" has been published in the International Review of Education (Journal of Lifelong Learning). It is selected as the Editor's Monthly Choice article for April.

The sixth Chapter presents the possible factors which have the impact on lifelong learning competencies of teacher trainers and is also the qualitative part of this dissertation. The article, titled "Influencing Factors on Lifelong Learning Capabilities of Teacher Trainers: A Qualitative Investigation," has been accepted in Opus et Educatio.

The last Chapter concludes this dissertation. It highlights the key findings, reveals the shortcomings, discusses the contributions, and makes recommendations for future investigations.

2. A SYSTEMATIC LITERATURE REVIEW

2.1. Introduction

Lifelong learning is a broad term whose definitions have common meanings and which has been explained by organizations such as the European Commission, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the Organization for Economic Cooperation and Development (OECD).

The European Commission (2001) defines lifelong learning as any intentional learning activities conducted throughout a person's lifetime to improve their knowledge, skills, and competencies from an individual, municipal, societal, and/or career standpoint. From this conventional definition, a more robust definition of lifelong learning emerged—that is, lifelong learning refers to all processes that transform a person's body, mind, and social experiences intellectually, emotionally, and practically before they are integrated into their life story, resulting in a more experienced individual (Jarvis, 2009).

Meanwhile, the UNESCO definition of lifelong learning includes all intentional learning from birth to death that attempts to advance knowledge and skills for anyone who intends to engage in learning activities. Part of the broad definition of lifelong learning refers to both informal learning in settings such as the workplace, at home, or in the community and formal education in institutions such as schools, universities, and alternative education centers (Tuijnman et al., 1996). According to the European Lifelong Learning Initiative, lifelong learning is a consistently supportive process that stimulates and empowers individuals in acquiring all the awareness, values, skills, and comprehension they would require throughout their lifetime and apply them with self-belief, innovation, and pleasure in all positions, contexts, and climates (Watson, 2003). Therefore, lifelong learning can be generally defined as learning that one seeks throughout their life and that is flexible, varied, and accessible at diverse times and locations.

According to John Dewey, education is the process of giving a person the skills necessary to take charge of their world and fulfill their obligations. The ideas of education and lifelong learning endure over the life of an individual's existence. Lifelong learning transcends the limits of education and goes beyond traditional education (Edwards & Usher, 1998). In this regard, it is vital to assess how education settings can support lifelong learning. This literature review is the groundwork for the future implementation of educational institutions as lifelong learning centers.

2.2. Importance of a systematic literature review of lifelong learning

A review of educational research in lifelong learning is the initial step to understanding relevant concepts and conducting empirical research. Both narrative and systematic reviews help identify research gaps and develop research questions, respectively. Meanwhile, systematic reviews include not only information obtained from the literature but also the adopted approach and where and how the literature was found. The significance of a systematic literature review (Cronin, 2011; Mallett et al., 2012) can be seen in the criteria used to assess whether to include or exclude a study from the review, reducing article selection bias.

Do et al. (2021) conducted the first systematic scientific investigation of the literature on lifelong learning although the selected studies focused only on the Southeast Asia context. Because the researchers used bibliometric analysis, it was not possible to study the intricacies of a lifelong learning issue, evaluate the quality of each scientific paper, or accurately highlight its effects on the topic. To overcome these limitations and provide a more general overview of the research topic, another systematic review of lifelong learning literature must be conducted. Therefore, our research will contain policy document, theoretical and empirical papers from 2000 to 2022 to provide updated information on lifelong learning in educational research. This literature review aims to identify concepts and theories, research areas, research trends, and research methods associated with lifelong learning in educational research in different countries. These intentions have guided the following research questions for this literature review:

1. What concepts and theories have been applied to explain lifelong learning in education research?
2. What research problems have been examined in lifelong learning in education research?
3. What research methodologies have been adopted to evaluate lifelong learning in education?

2.3. Methodology

Lifelong learning in the educational setting is assessed using a systematic review of literature instead of a narrative review or bibliometric analysis. A systematic literature review is considered as a scientific, unambiguous, and repeatable process for locating, analyzing, and summarizing every available published and registered research article to address a clearly articulated question (Dewey & Drahota, 2016). To ensure the effectiveness of the document

search strategy, this study used the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) as suggested by Page et al.(2021).

2.3.1. Procedure

This study employed the largest multidisciplinary databases, such as Web of Science (WoS), Scopus, and ProQuest, to search for studies in lifelong learning. It also investigated two institution-based websites focusing on lifelong learning, the UNESCO Institute of Lifelong Learning and the European Commission, and gathered their policy documents, publications, and reports. Throughout the period 2000–2022, all lifelong learning studies were considered to ensure that all up-to-date information is captured. Our keywords were "lifelong learning" and "education," and we set our filters to include open-access articles and journals related to education, social science, and the English language. Based on the publication of hundreds of articles, we developed our inclusion and exclusion criteria.

2.3.2. Included and excluded studies

We selected articles based on the following criteria: published in educational science and social science publications, employed both theoretical and empirical research (qualitative, quantitative, or mixed methods), and open access. The decision was made to exclude lifelong learning articles that did not focus on the education field, such as medicine, engineering, and labor studies, and those with unsuitable titles and abstracts. Duplicate articles were removed after the articles that met these criteria were assessed using R Studio software.

2.3.3. Screening

The screening stage involved an evaluation of titles and abstracts to determine their suitability for the research question and literature review methodology. Through this method, we discovered irrelevant articles and removed them. The remaining policy documents, theoretical and empirical studies were reviewed and analyzed in the last screening round, producing a total of 55 eligible articles. Figure 2.1 shows the procedure of finding and selecting relevant literature according to the PRISMA 2020 flow diagram (Page et al., 2021).

2.3.4. Data extraction and analysis

To answer the research questions, we categorized lifelong learning concepts and theories, research trends, and methods. We extracted the concepts and theories from both policy documents, theoretical and empirical publications and then gathered information on research trends and methods based on empirical studies. We then conceptually coded and categorized the data and used R Studio software to analyze the articles both qualitatively and quantitatively.

Identification of studies via databases

Identification of studies via organizations

Identification

Records identified from*:
  Web of Science (n = 306)
  Scopus (n = 77)
  ProQuest (n = 65)
  Total articles = 559

→ Records removed before screening:
  Duplicate records removed (n = 16)

Records identified from:
  European Commission (n = 3)
  UNESCO Institute of Lifelong Learning (n = 5)

Screening

Records screened (n =543)

→ Records excluded**
  Irrelevant studies (n = 479) after screening the titles and abstracts

Reports sought for retrieval (n = 64)

→ Reports not retrieved (n = 2)

Reports sought for retrieval (n = 8)

Reports assessed for eligibility (n = 62)

→ Reports excluded:
  Studies focusing on jobs, employment, and workers (n = 15)

Reports assessed for eligibility (n = 8)

Included

Studies included in review (n = 47+8= 55)
Theoretical studies (n =34)
Empirical studies (n =21)

Figure 2. 1 Selection procedure of studies for analysis according to PRISMA 2020

2.4. Findings

2.4.1. Lifelong learning concepts and theories

Our analysis of 55 studies covering the period 2000–2022 showed that lifelong learning was explained using different concepts based on the research area and trends. An overview of concepts related to lifelong learning can be found in table 2.1. Meanwhile, the results of the word cloud analysis in R Studio (Figure 2.2) revealed that the most prominent concepts were lifelong learning skills, lifelong learning competencies, and the three types of lifelong learning (formal, nonformal, and informal).

Tabel 2. 1Analysis of concepts related with lifelong learning

Concepts	Authors
adult education	(Ivanova, 2009)(Mandal, 2019)(Tsatsaroni & Evans, 2014)
assessment	(Green, 2002; Matsumoto-Royo et al., 2022)
attitudes toward learning and individual lifelong learning behavior	(Lavrijsen & Nicaise, 2017)
beliefs	(Bath & Smith, 2009a)
biopolitical shift of lifelong learning	(Beighton, 2021)
communication skills and predisposition	(Deveci, 2019)
coping strategies	(Muller & Beiten, 2013)
COVID-19	(Deveci, 2019; Eschenbacher & Fleming, 2020)
educational technology	(Sen & Durak, 2022)
European qualification framework	(Elken, 2015)
finance	(Oosterbeek & Patrinos, 2009)
humanism	(Black, 2021; Osborne & Borkowska, 2017)
integrated framework of lifelong learning	(D. James, 2020; Panitsides, 2014)
intercultural universities	(Tyson & Vega, 2019)
knowledge-constitutive practices	(Nicoll & Fejes, 2011)
learning achievements	(Omirbayev et al., 2021)
learning strategies	(Cort, 2009; Muller & Beiten, 2013)
life-deep learning, ethical principles, learning society, and learning communities	(Osborne & Borkowska, 2017)
lifelong learners	(Adams, 2007; Bagnall, 2017; Bath & Smith, 2009a)
lifelong learning competencies	(Council of the European Union, 2018; Grokholskyi et al., 2020b; Kwan et al., 2017; Omirbayev et al., 2021; Shin & Jun, 2019)
lifelong learning experience	(Shin & Jun, 2019)
lifelong learning policies	(Rambla et al., 2020; Tuparevska et al., 2020a, 2020b; Valiente, Capsada-Munsech, et al., 2020; Valiente, Lowden, et al., 2020)
lifelong learning skills	(Adams, 2007; Bath & Smith, 2009a; Deveci, 2022; Karataş et al., 2021; Moore & Shaffer, 2017; Omirbayev et al., 2021)
lifelong learning tendencies	(Matsumoto-Royo et al., 2022; Nacaroglu et al., 2021; Sen & Durak, 2022)
metacognitions	(Grokholskyi et al., 2020b; Matsumoto-Royo et al., 2022)
open universities	(Zuhairi et al., 2020)
peer-assisted learning	(Kuit & Fildes, 2014)
perception	(Adams, 2007; Buza et al., 2010; Cefalo & Kazepov, 2018)
personal learning environment	(Yen et al., 2019b)
personality determinants	(Grokholskyi et al., 2020b)
preschool education	(Karalis, 2009)
professional development	(Theodosopoulou, 2010; Zuhairi et al., 2020)
quality, equity, and inclusion	(Sunthonkanokpong & Murphy, 2019)
regulation and governance, institutional structures, and curricula	(Green, 2002)
rhizome	(Usher, 2015)
self-directed learning	(Karataş et al., 2021; Kuit & Fildes, 2014; Nacaroglu et al., 2021)
self-efficacy	(Sen & Durak, 2022)
social exclusion	(Tuparevska et al., 2020b, 2020a)
teacher competencies	(Theodosopoulou, 2010)
teacher education	(Simmons & Walker, 2013; Sunthonkanokpong & Murphy, 2019)
teaching-learning approaches	(Karataş et al., 2021)
Techno-solutionism and instrumentalism	(Black, 2021)
three types of lifelong learning (formal, nonformal, and informal)	(do Nascimento et al., 2018; UIL, 2017; Walters et al., 2014; Yang et al., 2015; Yen et al., 2019; Yorozu, 2017)
workplace learning	(Maxwell, 2014)

Figure 2. 2 Word cloud analysis of lifelong learning concepts

Many publications included in our review lack a clear theory of lifelong learning. Our analysis of the 55 studies, however, revealed an attempt by scholars to apply comprehensive theory (Bagnall, 2017), theory of transformative learning (Eschenbacher & Fleming, 2020), theories of societal learning (Osborne & Borkowska, 2017) to lifelong learning.

2.4.2. Research areas in lifelong learning

We inductively analyzed 21 of the 55 empirical studies in our review to examine the common research problems that the researchers presented and addressed. From this analysis, three common research areas emerged: problems associated with the conceptual framework or policies of lifelong learning, issues surrounding lifelong learning abilities, and challenges linked to factors that influence lifelong learning and/or lifelong learning abilities. Table 2.2 presents a detailed analysis of these research problems in the 21 studies.

We also found that researchers described lifelong learning abilities using terms such as "lifelong learning skills," "lifelong learning competencies," and "lifelong learning tendencies." Some studies also investigated the impacts of demographic data to address their research problems (e.g.,Buza et al., 2010; Nacaroglu et al., 2021; Sen & Durak, 2022; Shin & Jun, 2019).

Tabel 2. 2 Analysis of research areas

Research Areas		Authors
concepts used in policies of lifelong learning	a conceptual framework for lifelong learners who leave school	(Adams, 2007)
	the notion of social isolation in lifelong learning policies developed by the European Union (EU)	(Tuparevska et al., 2020a)
	Vulnerability in lifelong learning policies developed by the EU	(Tuparevska et al., 2020b)
	the relations between lifelong learning policies and the definition of young adults in terms of social vulnerability	(Rambla et al., 2020)
lifelong learning abilities	lifelong learning skills during the course	(Moore & Shaffer, 2017)
	lifelong learning skills in biology	(Kuit & Fildes, 2014)
	lifelong learning tendencies, technical self-efficacy, and professional competence	(Sen & Durak, 2022)
	the mediating function of preparedness for self-directed learning in the correlation between lifelong learning skills and preservice teachers' teaching-learning style	(Karataş et al., 2021)
	different forms of teacher training in lifelong learning	(Simmons & Walker, 2013)
	relation between lifelong learning tendencies and self-regulatory skills	(Nacaroglu et al., 2021)
factors that influence lifelong learning and/or lifelong learning abilities	multi-layered influence of individual and organizational factors on lifelong learning competencies	(Shin & Jun, 2019)
	characteristics and traits that may indicate a person's tendency for lifelong learning	(Bath & Smith, 2009a)
	importance of external barriers to explain inequalities in lifelong learning participation	(Lavrijsen & Nicaise, 2017)
	personal learning environment (PLE) management's forecast of PLE application in fostering lifelong learning	(Yen et al., 2019)
	interpersonal communication in the learning and teaching environment as a key indicator of current and future engagement in lifelong learning	(Deveci, 2019)
	role of personality traits and metacognitions in the acquisition of lifelong learning competency	(Grokholskyi et al., 2020)
	impact of the pandemic on lifelong learning skills	(Deveci, 2022)
	assessment processes that foster the improvement of metacognition abilities and encourage lifelong learning	(Matsumoto-Royo et al., 2022)
	challenges to improve lifelong learning in open universities	(Zuhairi et al., 2020)
	learning strategies of lifelong learners	(Muller & Beiten, 2013)
	how education can be organized to ensure quality and lifelong learning	(Buza et al., 2010)

2.4.3 Research methodologies in lifelong learning

Of the 21 studies, 11 conducted quantitative research, seven qualitative researches, and three mixed-method research. Differences were observed in their research instruments, analysis, and participants based on their research design and methods. We will discuss these research methodologies based on the aforementioned three common research problems.

Table 2.3 summarizes the main research instruments used by lifelong learning studies. The researchers also adopted several other research tools, including the Competences Scale for Educational Technology Standards, the Teaching-Learning Conceptions Scale, the Self-Directed Learning Readiness Scale, the Perceived Self-Regulation Scale, the Dimension

Learning Organization Questionnaire, learning agility, knowledge sharing, learning approaches, the General Self-Efficacy Scale, the Openness to Experience Scale, change readiness, the Epistemic Beliefs Inventory, general intelligence, self-assessment of metacognitive knowledge and metacognitive activity, reflexive skills, the questionnaire of implicit theories, a diagnosis of motivational structure, and the teaching and assessment strategies for pedagogical practice instrument, to investigate the relation between lifelong learning abilities and other variables or their impacts.

Tabel 2. 3 Analysis of research instruments based on their research problems

Research problems	Research instruments	Authors
conceptual framework or policies of lifelong learning	interview	(Adams, 2007)
	interviews, documents	(Tuparevska et al., 2020a)
	interviews, policy documents	(Tuparevska et al., 2020b)
	interview	(Rambla et al., 2020)
lifelong learning abilities	Effective Lifelong Learning Inventory	(Moore & Shaffer, 2017)
	student surveys	(Kuit & Fildes, 2014)
	lifelong learning tendencies scales	(Sen & Durak, 2022)
	Lifelong Learning Tendency Scale	(Karataş et al., 2021)
	interview	(Simmons & Walker, 2013)
	lifelong learning scale, semi-structured interviews	(Nacaroglu et al., 2021)
	lifelong learning competencies scales	(Shin & Jun, 2019)
factors that influence lifelong learning and/or lifelong learning abilities	lifelong learning scale	(Bath & Smith, 2009a)
	data from the Program for the International Assessment of Adult Competencies	(Lavrijsen & Nicaise, 2017)
	personal environment learning	(Yen et al., 2019)
	Predispositions for Lifelong Learning	(Deveci, 2019)
	questionnaire form on the individual experience of LLL, development of LLL competency (scores of two semesters)	(Grokholskyi et al., 2020)
	lifelong learning skills	(Deveci, 2022)
	"Metacognition and Lifelong Learning in the Teaching and Assessment of Future Teachers" questionnaire, interview	(Matsumoto-Royo et al., 2022)
	interviews, focus group discussion	(Zuhairi et al., 2020)
	learning styles instrument, coping strategies scale	(Muller & Beiten, 2013)
	lifelong learning conception, the relation between teaching and lifelong learning, interview	(Buza et al., 2010)

In some cases, some researchers developed these instruments, while in others, they modified existing tools (e.g., Effective Lifelong Learning Inventory (Crick et al., 2004), Lifelong Learning Competencies Scale (Sahin et al., 2010), and Lifelong Learning Tendency Scale (Coşkuna & Demirel, 2010)). These researchers also performed many types of data analysis based on their data collection tools and data distribution methods, including descriptive and diagnostic analyses, hierarchical linear modeling, reliability, principal

component analysis, confirmatory factor analysis, structural equation modeling, regression, multivariate regression, correlation, comparative analyses (t-test or Mann–Whitney U test), and content analysis.

Tabel 2. 4 Analysis of participants based on research problems

Research Problems	Participants	Context	Authors
conceptual framework or policies of lifelong learning	secondary school teachers	Australia	(Adams, 2007) (Adams, 2007)
	EU LL experts	Europe	(Tuparevska et al., 2020a)
	EU LL experts	Europe	(Tuparevska et al., 2020b)
	young adults, experts	Spain, Austria	(Rambla et al., 2020)
lifelong learning abilities	undergraduate students	United States	(Moore & Shaffer, 2017)
	undergraduate students	Australia	(Kuit & Fildes, 2014)
	student teachers	Turkey	(Sen & Durak, 2022)
	student teachers	Turkey	(Karataş et al., 2021)
	teacher educators	England	(Simmons & Walker, 2013)
	students	Turkey	(Nacaroglu et al., 2021)
factors that influence lifelong learning and/or lifelong learning abilities	primary teachers	Korea	(Shin & Jun, 2019)
	university students	Australia	(Bath & Smith, 2009a)
	students	Europe	(Lavrijsen & Nicaise, 2017)
	master students	United States	(Yen et al., 2019)
	students and teachers	United Arab Emirates	(Deveci, 2019)
	students	Ukraine	(Grokholskyi et al., 2020)
	students	United Arab Emirates	(Deveci, 2022)
	student teachers	United States	(Matsumoto-Royo et al., 2022)
	administrators, academic staff, students	Taiwan, Indonesia	(Zuhairi et al., 2020)
	students	Denmark, Finland, Germany	(Muller & Beiten, 2013)
	postgraduate students and teachers in teacher education	Albania	(Buza et al., 2010)

These studies also involved several types of participants, such as students, primary and secondary school teachers, undergraduates, postgraduates, student teachers, EU Lifelong Learning experts, young adults, teacher educators, administrators, and academic staffs, which all represent different contexts. Table 2.4 shows that Asia, the Middle East, and Europe can be regarded as the general contexts of these studies. Notably, however, fewer studies have been conducted in Asia than in the Middle East and Europe, which may pose a challenge to the generalization of the findings of some studies in these contexts.

2.5. Discussion

The results of our review showed that theoretical papers, such as reports, policy document, and lifelong learning concepts, were generally much more extensive than empirical

studies. Despite attempts to formulate new lifelong learning theories and apply existing ones, researchers have yet to develop a strong theory of lifelong learning. Consistent with the results of our systematic review is Steffens (2015) assertion that no single theory of learning can adequately account for all types of lifelong learning.

The prior studies' use of lifelong learning concepts can be the basis for further studies to build comprehensive theoretical frameworks in line with the current situation. This study's concept analysis identified lifelong learning skills; lifelong learning competencies; and formal, nonformal, and informal learning as the most salient concepts.

Meanwhile, the analysis of each empirical study's research problems generated three shared research trends in lifelong learning. Additionally, these studies were found to have investigated the relation between lifelong learning abilities and other variables, such as professional competencies, self-efficacy, and teaching-learning approaches. Moreover, they examined the factors affecting lifelong learning, lifelong learning skills, lifelong learning competencies, and lifelong learning tendencies; the hierarchical effects of individual and organizational variables; external barriers; professional learning environment; metacognitions; and personality determinants. Alongside these factors, demographic components such as gender, age, subjects, and educational level can also significantly influence lifelong learning. Furthermore, this review also found research gaps in lifelong learning in educational research, which offers the potential to explore lifelong learning using variables such as new learning communities, advanced teaching-learning techniques, learning styles, learning strategies and motivation in addition to self-directed learning, personal learning environments, and educational technology.

With regard to research methods, this study identified only three studies that used mixed methods, indicating an inadequacy in the field. Hence, all future research of lifelong learning should be conducted using mixed methods. Our examination of instruments revealed different tools that were used to assess the three common research problems. Such an effort may require the application of different data analysis techniques, including content analysis, descriptive analysis, and inferential analysis.

The prior studies, as a result of our review, only interviewed lifelong learning specialists, young adults, and secondary teachers to address their research issues, such as concepts and policies. Indeed, the development of lifelong learning policies or conceptual frameworks would

benefit from the involvement of teachers from basic education schools, teacher education institutions, and universities.

Several research problems associated with lifelong learning capabilities involved university students, students and teacher educators. In light of this, it is still important to examine the lifelong learning skills, competencies, and tendencies of all stakeholders in the educational setting. The previous studies analyzed different factors that may shape lifelong learning and/or lifelong learning abilities with all possible participants. Considering the geographical context, more research must be conducted on the three research trends in lifelong learning in Asia as opposed to Europe. This will strengthen the generalizability of findings to specific target groups such as students, teachers, and teacher trainers in the specific area.

Nevertheless, it must be emphasized that our study is not without limitations. Our review may have overlooked several empirical studies that were not in Scopus, WoS, or ProQuest because we selected only open-access articles indexed in these databases. Additional research may have a different effect on the results. Neither the details of the research instruments nor the findings of each study can be examined in detail.

Therefore, we recommend that subsequent systematic reviews and meta-analyses in lifelong learning incorporate articles indexed in other databases. Researchers may also conduct future reviews examining the history and psychometrics of research instruments used in lifelong learning and considers the results of each empirical study. However, a comparison of study findings in the Asian context continues to be a challenge because not enough research has been conducted in all possible lifelong learning research areas. Considering the impact of COVID-19, lifelong learning research in new learning communities, environments, or organizations may be conducted to capture updated information.

2.6. Conclusion

This literature review aimed to identify concepts, theories, issues, trends, and research methodologies associated with lifelong learning in educational research. Our findings addressed concepts, lifelong learning policies, lifelong learning competencies, and formal, nonformal, and informal. The studies included in this review highlighted that a strong theory of lifelong learning has yet to be developed and applied. In addition, we deductively examined three common research trends: issues with basic concepts or guiding principles of lifelong learning, problems surrounding lifelong learning capacities, and challenges regarding variables that affect lifelong learning and/or lifelong learning capacities. Regarding methodology, we

examined the techniques, tools, data analysis, and participants included in lifelong learning studies. Overall, educational researchers must continue to conduct more mixed methods studies, focusing on the Asian context.

3. RESEARCH METHODOLOGY

3.1. Research design and procedure

This research employs an advanced mixed-method, the explanatory sequential design (Creswell, 2012; Lund, 2012; Tashakkori et al., 1998), chosen to investigate the lifelong learning competencies of teacher trainers within a new learning community. This design was selected to capitalize on the strengths of both quantitative and qualitative data, as each phase will address the research questions more comprehensively than either type of data alone. Additionally, the decision to adopt a mixed-methods approach was influenced by the scarcity of mixed-method studies in the field of lifelong learning research identified in a systematic literature review.

In the quantitative phase, three questionnaires—Lifelong Learning Questionnaire, Lifelong Learning Competencies Scale, and Teachers' Learning Strategies Questionnaire—along with background information about the teacher trainers were utilized. Simple random sampling technique was employed for participant selection. Building upon prior quantitative research, a qualitative study was conducted to complement or refute the quantitative results. A qualitative semi-structured interview instrument was developed based on quantitative study variables and findings. Interviews were conducted remotely using messaging applications, and oral consent was recorded before each interview. Transcripts were meticulously reviewed, and any gaps were addressed.

To ensure cultural relevance and accessibility, all instruments were translated into the Burmese language. Ethical considerations were rigorously upheld throughout the study. Participants were fully informed about the study's objectives, voluntary participation, and confidentiality of their data. The study's instruments were approved by the Institutional Review Board of the Doctoral School of Education, University of Szeged. By adopting this comprehensive methodology, this study seeks to provide a detailed understanding of the critical factors influencing teacher trainers' lifelong learning competencies within a new learning community.

3.2. Participants

The participants in this study consisted of teacher trainers from Education Degree Colleges in Myanmar. By including participants from diverse backgrounds and regions within the education degree colleges, this study aimed to capture a comprehensive understanding of lifelong learning competencies among teacher trainers in Myanmar. Out of the total population

of 1,058 teacher trainers working at education degree colleges in Myanmar, they were selected using a random sampling method. Following Creswell's recommendation to determine a sufficient sample size for the planned statistical procedures (2012, p.147), a total of 232 teacher trainers from various departments—education studies, Myanmar, English, mathematics, science, social studies, and local curricula—were selected for inclusion in the pilot study and regression model study. A subset of 300 individuals was chosen for the main quantitative study. Furthermore, for the qualitative component of the study, 12 teacher trainers currently employed at education degree colleges in Myanmar were selected through purposive sampling, taking such factors into consideration as age and region. Number of the participants in this research are outlined in Table 3.1.

Table 3. 1 Number of participants

Research procedure	Pilot study	Quantitative Phase		Qualitative Phase
		Regression model	Main study	
Number of participants	232	232	300	12

All participants were provided with detailed information about the voluntary nature of their participation and assured of the confidentiality of their responses. They were fully briefed on the study's objectives, the types of instruments being used, and the proper procedures for completing each instrument. Additionally, participants were assured that their involvement would be restricted solely to research purposes and would not extend beyond the scope of the study.

3.3. Research instruments
3.3.1. Quantitative phase

Lifelong Learning Competencies Scale (LLLCS)

The existing research tools on lifelong learning competencies, including an evaluation of psychometric properties, was extensively reviewed. The Lifelong Learning Competencies Scale (LLLCS), which was specifically designed to meet the needs of teacher trainers in the Myanmar context, was then created as the main measuring instrument for this research. Additionally, a validity and reliability assessment of the LLLCS was carried out. LLLCS has eight domains: Literacy competence (LiC), with three items; Multilingual competence (MuC), with three items; Mathematical competence and competence in science, technology and engineering (MaSC), with six items; Digital competence (DiC). with three items; Learning to

learn competence (LLC), with three items; Citizenship competence (CiC), with three items; Entrepreneurship competence (EnC), with three items; and Cultural awareness and expression competence (CuC), with three items.

In addition to the primary instrument, LLLCS, we also employed two adapted research tools for investigation into our research questions. Their psychometric qualities were assessed as well.

Lifelong Learning Questionnaire

To examine the perceptions of teacher trainers on lifelong learning, we used the Perceptions of Lifelong Learning Questionnaire, which was developed by Buza et al. (2010). After adapting and translating it into the context of our study, this instrument is one dimensional and composed of 9 items (e.g. "Lifelong learning can improve personal and professional developments.").

Teachers' Learning Strategies Questionnaire

To identify the learning strategies used by the participating teacher trainers, the Learning Strategies scale derived from the Teaching and Learning Strategies Questionnaire designed by Abrami et al.(2005) was used, which consists of 16 items (e.g. "Set own learning goals"). The original questionnaire includes four subscales: students' learning strategies and approach to teaching, portfolio use, and technology experience. In accordance with the context of the study, we adapted students' learning strategies into teachers' learning strategies.

These questionnaires were graded on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). 'It is fair to say that there is no absolute standard for the number of response options to be used on Likert Scales (and on rating scales in general). In light of these considerations, my personal preference in the past has been to omit the undecided category'(Dörnyei & Taguchi, 2009). When we collected these data from the teacher trainers, we also collected the demographic information, in an instrument with dichotomous and multiple-choice questions to obtain personal and professional information regarding gender, age, region of the education degree colleges, level of education, and teaching services as a teacher trainer.

3.3.2. Qualitative phase

Our main interview guide consisted of 15 questions covering the teacher trainers' perceptions of lifelong learning and lifelong learning competences, factors they felt influenced

lifelong learning competences, and the impacts of new learning environments and learning strategies. However, participants were encouraged to elaborate on any of their answers. The interviews followed the protocol below:

Perceptions on lifelong learning and lifelong learning competences

i.   How do you understand lifelong learning?
ii. How can you tell if someone is practicing lifelong learning?
iii. According to the European Commission, there are eight key competences for lifelong learning: literacy, multilingual, math and science, digital, learning to learn, citizenship, entrepreneurship, and cultural awareness. Among these, which are your highest and lowest competences? Why do you think so?

Factors influencing each competency phase

i.   Based on your answers, how do you think these highest and lowest competences are related to your background factors?
ii. What factors could improve your competences?
iii. What factors hinder them?

New learning community phase

i.   Since COVID-19, how is your learning environment?
ii. Which areas have changed and which remain the same?
iii. How do you think that these changes or absence of changes can affect any of your lifelong learning competences?

Learning Strategies phase

i.   Which learning strategies do you use to improve your teaching competences?
ii. Which one do you prefer to use?
iii. By improving them, how can you also improve your lifelong learning competences? Which competence?

3.4. Data analysis
3.4.1. Quantitative phase
The data analysis was conducted utilizing the statistical software R version 4.1.0 (2021-05-18). Validation of the Lifelong Learning Competencies Scale (LLLCS) involved both

reliability and validity assessments. Internal consistency reliabilities, as indicated by Cronbach's alphas, were computed to evaluate each dimension of the LLLCS. The statistical significance of the LLLCS was assessed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. Additionally, the dataset's normal distribution was examined through skewness and kurtosis analyses. Validity evaluation encompassed face, content, and construct validity. Construct validity was further explored through confirmatory factor analysis (CFA), utilizing the maximum likelihood estimation method (MLM). Fit indices such as the chi-square test, Tucker–Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) were employed to assess the model's fit. To predict models of lifelong learning competencies, multiple linear regression analysis (MLRA) was performed, with lifelong learning competencies as the dependent variable and personal and professional variables, including perceptions of lifelong learning and learning strategies, as independent variables. Multicollinearity among predictors was evaluated using variance inflation factor (VIF) values. Furthermore, analysis of variance (ANOVA) was employed to compare outcome models and determine the most suitable model. Descriptive and inferential statistics were utilized to address the main research inquiries. Descriptive analysis was employed to characterize the research variables and lifelong learning competencies' dimensions. Inferential analysis involved independent sample t-tests and one-way ANOVA to discern mean differences concerning background factors, Dunnett's test for between-participant comparisons, and Pearson's correlation to investigate associations among the variables.

3.4.2. Qualitative phase

Inductive methods are used in this qualitative data analysis to draw findings. To ensure validity, a pilot study was carried out using PhD students who were former teacher trainers. The coding of text data involved the development of themes and meanings through inductive reasoning. Two themes that reflected opinions on competencies and lifelong learning were selected and defined. A systematic approach that includes piloting, note-taking, translation adjustments, participant coding, inductive coding, and mixed methods integration improves the study's validity and reliability. This study's triangulation approach, which balances qualitative and quantitative data, lowers bias and increases reliability.

4. THE LIFELONG LEARNING COMPETENCIES SCALE FOR TEACHER TRAINERS: CREATING AND VALIDATING THE INSTRUMENT IN THE MYANMAR CONTEXT

4.1. Introduction

The idea of lifelong learning emerged in the 1970s and became prominent in the 21st century. Due to the popularity of lifelong learning concept and the crucial role it plays in the professional development of teachers, study of the concept in the teaching context can help develop teachers acquire the vital contributions of educational science. Before 2005, lifelong learning had been defined in a variety of ways and was separated it into several components. After this, many studies were conducted to explore lifelong learning among educational staff, healthcare workers and business workers. This research emphasised the relationships between lifelong learning and other variables, such as motivation, self-directed learning, self-efficacy and organisational culture. The researchers measured the attitudes, perceptions, tendencies, skills, dispositions and competencies related to lifelong learning.

From these studies, many instruments were developed for lifelong learning, and they proved their reliability and validity in several contexts. Although lifelong learning includes a range of instruments, many of them are too general and too closely tied to the researchers' contexts. This study develops a theoretically standardised competencies scale for lifelong learning for teacher trainers in the Myanmar context and to analyse its reliability and validity from an empirical perspective.

4.2. Conceptual framework

We examined the relevant adopted the EU Framework for Lifelong Learning Competencies for a standardised framework. To meet the demands of personal satisfaction, a sustainable and healthy way of living, employment, civic engagement and social integration, in 2005, the European Union Commission established eight recommended competencies within the European Framework for Lifelong Learning (Council of the European Union, 2018). The three primary implementation issues for teacher development were translating essentials into learning outcomes, supporting educational professionals and learner assessment. The European Commission (2019) suggests that lawmakers, educators, relevant stakeholders and students themselves adopt the uniform European reference framework on core competences. This document also describes how to assist and foster the professional growth of educational workers.

The eight competencies in the European framework are all equally important and are related to one another. These competencies are defined as follows.

- Literacy competence involves the knowledge, skills and attitudes to express and recognise concepts, feelings and views in the native tongue.
- Multilingual competence consists of the capacity to acquire foreign language and intervene in different cultures.
- Mathematical competence is the skills of using mathematical modes of thought to resolve daily problems in real life. Science competence is associated with the competencies to observe and experiment with respect to changes caused by human activity and to make fact-based conclusions.
- Digital competence refers to the use of digital technologies in a confident, critical and responsible manner for the purpose of learning and working.
- Learning to learn competence entails reflection on oneself, effective time management, working collaboratively, resilience, managing one's own learning, career and physical and mental well-being.
- Citizenship competence contains citizen's responsibilities, engagement in social affairs and understanding of both national and global evolution and sustainability.
- Entrepreneurship competence concerns the ability to work on projects with cultural, civil or financial benefit if provided with opportunities and ideas.
- Cultural awareness and expression competence entail the skills to identify, understand and express different cultures creatively and communicatively.

4.3. Review of the instruments in lifelong learning

Several instruments have been developed by researchers in lifelong learning and competencies, and other researchers have adapted these into several contexts. The Effective Lifelong Learning Inventory (Crick et al., 2004), the Lifelong Learning Scale (Kirby et al., 2010) and the Lifelong Learning Tendencies Scale (Coşkuna & Demirel, 2010) were developed to measure lifelong learning perceptions, attitudes and tendencies. Pilli et al.(2017), Demirel & Akkoyunlu (2017), Tekkol & Demirel (2018), Yilmaz & Kaygin (2018), Demir-Basaran & Sesli (2019) utilised the Lifelong Learning Tendencies Scale in their studies. Sahin et al. (2010) and Uzunboylu & Hürsen (2011) created research tools to assess lifelong learning competencies among academics, following the European framework. In our study, only the following two research instruments were reviewed.

4.3.1. Scale of Key Competence for Lifelong Learning

The Scale of Key Competence for Lifelong Learning (SKCLLL), created by Sahin et al. (2010) is based on the eight key competencies of lifelong learning as determined by the European Union Commission in 2005, so it contains eight factors. It was designed to find potential teachers' core competencies and the level of each.

Experts were asked for their views on the length, comprehensibility and competence of the items in the SKCLLL. The Cronbach's alpha reliability coefficient of the scale's validity was found to be good at (α = 0.8893). Its Kaiser–Mayer–Olkin (KMO) test result was 0.86, and the result for the test of sphericity was P < 0.01, which means factor analysis can be used for the scale. Each item's minimum factor loading value was 0.50. After the factor analysis, some of the scale's 27 items were found to have equivalent factor loading values in more than one factor, suggesting the removal of four items. Finally, there were 23 items on the scale, consisting of eight factors: Communication in Native Language (four items), Communication in Foreign Language/s (with four items), Mathematical and Basic Competence in Science and Technology (with three items), Digital Competence (with two items), Competence of Learning to Learn (with two items), Competence of Social and Citizenship Awareness (with three items), Competence of the Sense of Initiative and Entrepreneurship (with four items) and Competence of Cultural Awareness Expression (with one item). The SKCLLL was also used to investigate mathematics teachers' perceptions of lifelong learning competencies (Aykaç et al., 2020) to examine the self-efficacy of teacher candidates' lifelong learning key competences and educational technology standards(Kan & Murat, 2020) and to identify teacher candidates' lifelong learning competences and basic motivation resources as aspects of sustainability(Ilgaz & Eskici, 2019).

4.3.2. Lifelong Learning Competencies Scale

The other scale, Lifelong Learning Competencies Scale (LLLCS), was created by Uzunboylu & Hürsen (2011). Although the development of the LLLCS was inspired by the eight key competencies of lifelong learning adopted by European Commission (2018), factor analysis showed only six factors with 51 items.

Uzunboylu & Hürsen (2011) found out that a review of the literature identified no scale that is sufficiently accurate to identify the lifelong learning competencies of any individual. Consequently, they created a scale for the evaluation of lifelong learning competencies based on these findings and examined the validity and reliability of the scale's construction. After the

LLLCS items were created, specialists were invited to review the item pool and provide opinions on each. The item pools were also evaluated by the teachers, and their comments on how well they understood the items were taken into account.

The KMO value of the scale was good, at 0.938. The results of Bartlett's test of sphericity, P < 0.01, are also considered significant and suitable for the factor analysis. The scale's factor loading values ranged from 0.45 to 0.78. For all six scale dimensions, the reliability coefficient was at more than 0.70. After these operations, the LLLCS consisted of six subdimensions: 'self-management competencies', with 13 items; 'learning how to learn competencies', with 12 items; 'initiative and entrepreneur competencies', with 10 items; 'competencies of acquiring information', with 6 items; 'digital competencies', with 6 items; and 'decision-taking competencies', with 4 items. The items of the LLLCS were scored using a 5-point Likert Scale with the options 'Never', 'A little', 'A moderate amount', 'A lot', and 'Completely', for values 1–5, respectively. The LLLCS was used in studies of the relationship between the attitudes of private teaching institution teachers toward lifelong learning and their competences (Tenekeci & Uzunboylu, 2020) as well as the relationship between pre-service teachers' tendencies and perceptions toward lifelong learning (Pilli et al., 2017).

Both the SKCLLL and the LLLCS were evaluated in terms of their psychometrics. The Cronbach's alpha reliability coefficients for both instruments were acceptable. Ideally, the composite reliability would be assessed for both, as this value is less biased than Cronbach's alpha (Fornell & Larcker, 1981). Both of them were assessed in terms of their face validity, as they stated that experts were asked for their feedback with respect to each item. Because these instruments were founded on and inspired by the European reference framework on core competencies of lifelong learning competencies, they can be assumed to have content validity.

Although factor analysis was performed for both tools, and the factor loadings were in an acceptable range, discriminant validity by applying confirmatory factor analysis. The use of measurement scales in research can lead to incorrect conclusions regarding correlations between constructs, if the factor analysis is not correctly interpreted, and if discriminant validity is not demonstrated (Faller et al., 2006). To measure discriminant validity, confirmatory factor analysis is the most highly recommended method. Ideally, the researcher would perform confirmatory factor analysis following exploratory factor analysis, paying special attention to factor loadings, and then compute average variance extracted (AVE) and

shared variance estimations. To evaluate discriminant validity, it is important to compare AVE and shared variance estimations (Fornell & Larcker, 1981).

Three of the factors in SKCLLL, as designed by Sahin et al. (2010), are composed of fewer than three items: Digital Competence (with two items), Competence of Learning to Learn (with two items) and Competence of Cultural Awareness Expression (with one items). The rule of thumb is that at least three items should relate to each factor (Raubenheimer, 2004). Although the LLLCS was influenced by the European framework, six of the scale's elements do not directly correspond to the eight lifelong learning competencies. In general, it remains necessary to construct lifelong learning competency instruments in accordance with the European framework, and they should have excellent psychometrics.

After reflecting on these instruments to identify lifelong learning competencies, we developed a LLLCS instrument as well, based on the eight key competencies adopted by the European Commission, for use in teacher trainers in the Myanmar context.

4.4. Methodology
4.4.1. Procedure
According to Dörnyei & Taguchi (2009), a series of certain steps and procedures is necessary for constructing a good questionnaire. Among these steps are determining the questionnaire's general characteristics, selecting essential items for it, sequencing these in the correct order, providing instructions, translating the questionnaire into the target language, piloting the questionnaire and conducting item analysis. Our questionnaire was constructed using these principles.

The eight key competencies for lifelong learning in the European framework were chosen as the eight factors for use in developing our LLLCS. We focused a synthesis of knowledge, abilities and attitudes (Council, 2018) to create the items of the eight key competencies. To ensure that all teacher trainers understood all survey items and to improve the survey validity, the LLLCS for teacher trainers was translated into Burmese. The translated LLLCS was tested in the pilot survey, and then the validity and reliability were evaluated.

4.4.2. Participants
The participants in this study were teacher trainers from Education Degree Colleges in Myanmar. 'One way to determine the sample size is to select a sufficient number of participants for the statistical procedures the researcher plan to use'(Creswell, 2012, p.147).(Creswell, 2012) For this reason the amount of 232 teacher trainers in different departments (education

studies, Myanmar, English, mathematics, science, social studies and local curricula) were selected for this study.

4.4.3. Instrument

The instrument used in this study was the LLLC Scale, specifically designed to measure lifelong learning competencies in teacher trainers. The LLLCS consisted of 27 items across eight dimensions, reflecting the eight key competencies of lifelong learning competencies, according to the European Commission's framework.

Literacy competencies are assessed according to awareness, communication and understanding the impact of language. The first item therefore concerned knowledge of basic types of communication, a range of literary and non-literary works and the salient features of the various registers and styles of language in Myanmar. The second one refers to effective communication, both orally and in writing, in a variety of settings. They should also be able to monitor and adjust their own communication. The item is concerned with understanding the impact that language has on others and the need to use words positively and appropriately.

The dimension of multilingual competencies also has three factors, namely, awareness, usage and appreciation of different foreign languages. The first item in this dimension concerns possessing knowledge of the vocabulary and functional grammar of various languages, as well as the main verbal exchange patterns and linguistic registers. The second refers to having the ability to use tools correctly and learn lifetime language skills in both formal and informal settings. The third refers to having respect for cultural variety, being eager to learn new languages and being receptive to intercultural communication.

The dimension of competencies in mathematics and science represents understanding, skills and attitudes in mathematics and science. The first item in this dimension refers to comprehension of mathematical terms, concepts and issues. The second one relates to the application of basic mathematical principles and techniques (statistical data and graphs) to everyday circumstances at work and in the home. The third refers to the attitude toward the truth and willingness to look into causes and judge their viability. The fourth is understanding the trends, limitations and risks related to scientific concepts in general education. The fifth item regards utilising and managing scientific data, technological equipment and techniques to accomplish a goal or come to a reasoned decision. The sixth regards having a critical appreciation and curious mindset, and the final item of this dimension concerns being ethically conscientious and promoting environmental sustainability and safety.

The dimension of digital competencies contains awareness, application, critical thinking and ethics in digital technology. The first aspect concerns understanding how digital technologies can improve communication, creativity and innovation, along with their potential, limitations, repercussions and risks. The second describes the promotion of social inclusion, teamwork and creativity with the pursuit of professional goals with digital tools. The third item concerns the possession of a critical and forward-thinking perspective on their development and use in a way that is ethically upright, safe and responsible.

The dimension of learning to learn incorporates the three facets of knowledge, skill and applications of learning strategies. The first item in this dimension is identifying preferred learning strategies, the abilities that need to be developed, the means of doing so and opportunities for education, training and employment, along with any available support or assistance. The second refers to the ability to plan, persevere with, evaluate and share learning. The third is studying and working either independently or together with others, along with making use of prior knowledge, life experience and curiosity across a variety of life conditions.

The dimension of citizenship competencies consists of awareness, participation and supporting all ethnicities of Myanmar. Because these three statements are implied in this dimension, the first item refers to recognition of how national cultural identification affects identity in Myanmar, as well as the socioeconomic and sociocultural characteristics of the ethnic groups concerned. The second item refers to topics of general or public interest, such as societal sustainability. The third refers to support for social cohesion, enhancement of ways of life, encouragement of a culture of peace and non-violence, respect for the privacy of others and environmental responsibility.

The dimension of entrepreneurship competencies contains knowledge, skills and attitudes in different context and opportunities. The first item refers to comprehension of varied settings and opportunities for applying concepts to professional work. The second one relates to being able to work both independently and in teams to best mobilise resources. The third one refers to encouraging future educators and respect for their ideas, empathy and consideration for others and the environment.

The knowledge, skills and attitudes with respect to various cultural manifestations make up the cultural awareness and expression competencies dimension. The first item refers to understanding and valuing regional, national, Asian, European and international languages,

cultural traditions and artistic creation, as well as how these influences might affect one another and the respondent's own ideas. The second item relates to conveying and interpreting figurative and abstract concepts, feelings and experiences across a range of creative and cultural forms. The third captures maintaining an attitude of morality and responsibility when it comes to intellectual and cultural ownership.

In essence, LLLCS has eight domains: Literacy competence (LiC), with three items; Multilingual competence (MuC), with three items; Mathematical competence and competence in science, technology and engineering (MaSC), with six items; Digital competence (DiC). with three items; Learning to learn competence (LLC), with three items; Citizenship competence (CiC), with three items; Entrepreneurship competence (EnC), with three items; and Cultural awareness and expression competence (CuC), with three items.

Responses were given on a 4-point Likert Scale, ranging from 1 (strongly disagree) to 4 (strongly agree). 'It is fair to say that there is no absolute standard for the number of response options to be used on Likert Scales (and on rating scales in general). In light of these considerations, my personal preference in the past has been to omit the undecided category'(Dörnyei & Taguchi, 2009). The data were analysed using R studio software (version 4.1.2).

4.4.4. Data analysis

The internal consistency reliabilities (Cronbach's alphas) were computed to evaluate the reliability of each dimension of the LLLCS. The statistical significance of the LLLCS was examined using KMO and Bartlett's test of sphericity. Normal distribution of the dataset was also evaluated in terms of skewness and kurtosis.

The validity of the LLLCS was assessed in terms of its face validity, content validity and construct validity. Confirmatory factor analysis (CFA) and convergent validity (in terms of AVE and composite reliability (CR)) were utilised to evaluate the construct validity. CFA was assessed by setting the estimator as MLM. Chi-square test, Tucker–Lewis index (TLI), comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardised root mean square residual (SRMR) were also checked to validate the model's fit to the measurement model.

4.5. Results

The skewness value of the dataset was calculated as 1.37, and the kurtosis value was calculated as 2.43 to determine whether the dataset was normally distributed. Because the skewness and kurtosis values were greater than 1, the dataset was considered non-normally distributed. Mean-adjusted chi-squared statistics (estimator MLM) was applied to conduct the CFA. Even though data may never be normally distributed in practice, provided the model is properly stated, the ML technique can still produce trustworthy inferences. In MLM, likelihood parameter estimates with standard errors and a mean-adjusted chi-square test statistic that are robust to non-normality and robust procedures are preferred in the real world. The MLM chi-square test statistic is also referred to as the Satorra–Bentler chi-square (Rosseel, 2010).

4.5.1. Reliability

Because the LLLCS has eight factors, the reliability results for each factor are high at the Cronbach's $\alpha = 0.88$ for Literacy competence, $\alpha = 0.88$ for Multilingual competence, $\alpha = 0.87$ for Mathematical competence and competence in science, $\alpha = 0.88$ for Digital competence, $\alpha = 0.87$ for LLC, $\alpha = 0.87$ for Citizenship competence, $\alpha = 0.88$ for Entrepreneurship competence and $\alpha = 0.87$ for Cultural awareness and expression competence, respectively, as seen in Table 1. Consequently, the reliability of the LLLCS as a whole was high, $\alpha = 0.89$.

4.5.2. Validity
Face validity

The degree to which a measure appears to be related to a given construct is known as its face validity. It assesses the practicality, readability and clarity of the questionnaire's construction. On the other hand, if the information on a test appears to be relevant to the person taking it, it has face validity (Taherdoost, 2018). The LLLCS developed by the researchers was translated into Burmese. Five teacher trainers at education degree colleges acted as representative test takers and rated the questionnaire. These testers reported that each of the items of this questionnaire was understandable, consistent with the teacher training and relevant to the title and purpose. Therefore, it was considered feasible to measure the lifelong learning competencies of teacher trainers with this questionnaire.

Content validity

After the literature review for lifelong learning and review of existing instruments in the field, this instrument was adopted in this study was based on the eight key competencies of the

lifelong learning proposed and recommended by the European Commission (Council of the European Union, 2018; European Council, 2006).

Construct validity

The criteria of discriminant validity and convergent validity were developed by Campbell & Fiske (1959) to evaluate a test's construct validity. The degree of confidence one has that a particular variable is measured accurately by its indicators is known as convergent validity. The degree to which measures of several variables are correlated is known as discriminant validity.

Discriminant validity

In this study, the result for the KMO test was 0.89 and the result of the test of sphericity was $P < 0.01$, both indicating appropriateness for factor analysis. According to Furr and Bacharach (2014), CFA should be carried out where the researchers have a comprehensive understanding of a scale, including the amount of variables or factors, the correlations between certain items and specific factors and the links between factors. The factor loadings for the LLCS for teacher trainers in Myanmar are presented in Figure 3.1.
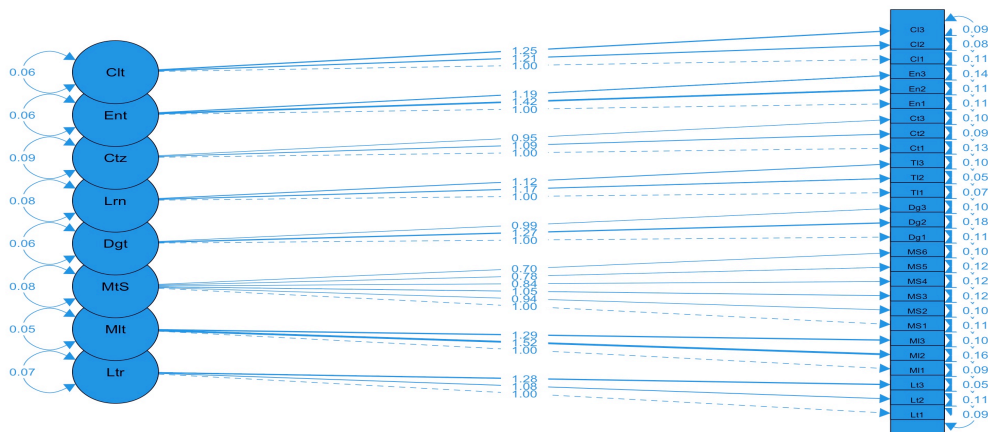
Figure 4. 1Confirmatory factor analysis model and factor loadings of the LLLCS

The result of the CFA for LLLCS was obtained with these fit indices and fit measures (Satorra–Bentler chi-square = 381. 014; df = 296; $p \leq 0.001$; robust CFI = 0.92; robust TLI = 0.91; robust RMESA = 0.05; and robust SRMR = 0.06). Chi-square divided by the degrees of freedom was less than 5 ($X^2/df < 5$). Robust fit indices were used in our study as mean-adjusted

chi-squared statistics (estimator MLM), which provided the correct calculation for the robust fit measures proposed by Brosseau-Liard et al. (2012).

Convergent validity

The convergent validity of a measurement model was assessed by the AVE and CR and factor loading following the guidelines of Fornell and Larcker (1981) and Hair et al (1998). The values of AVE for all factors were less than 0.5, except for the literacy competencies construct, which had an AVE of 0.52 and the learning to learn competencies construct, which had an AVE of 0.57. The values of CR for all factors were greater than 0.6 (see Table 3.1).

Table 4. 1 Cronbach's alpha, average variance extracted and composite reliability of the factors

Factors	α	AVE	CR
Literacy competence	0.88	0.52	0.75
Multilingual competence	0.88	0.41	0.66
Competence in mathematics and science	0.87	0.37	0.77
Digital competence	0.88	0.35	0.61
Learning to learn competence	0.87	0.57	0.81
Citizenship competence	0.86	0.47	0.73
Entrepreneurship competence	0.88	0.43	0.69
Cultural competence	0.87	0.44	0.70

Note: α = Cronbach's alpha; AVE = average variance extracted; CR = composite reliability

4.6. Discussion

The LLLCS for teacher trainers was created in accordance with the rules for instrument construction provided by Dörnyei & Taguchi (2009). The good Cronbach's alpha values for all variables and for the scale as a whole, the analyses indicated that it has excellent internal consistency reliability. As a result, the instrument is trustworthy.

The LLLCS for teacher trainers is considered valid, as its eight factors were intended to measure the eight key competencies of the lifelong learning proposed and recommended by the European Commission (Council of the European Union, 2018; European Council, 2006). The face validity test conducted with representatives of test takers showed that the items on this questionnaire are not difficult for the teacher trainers who respond to the survey or for researchers to utilise the instrument to investigate lifelong learning competencies.

Because discriminant validity is evaluated by the CFA in this study, the CFI and TLI values, which are both greater than 9, demonstrate strong model fit (Hu & Bentler, 1999). Additionally, the RMSEA, whose value is less than .05, shows the excellent model fit (Hu & Bentler, 1999). The scale's SRMR of .06 indicates a reasonable and acceptable model fit (Hu & Bentler, 1999). All the items in each factor have item loadings that are greater than 0.6. Awang (2014) found that the factor loading for each item should be greater than 0.5 for newly generated items and greater than 0.60 for adapted items based on the evident framework. However, special attention should be paid to the suggestions of Marsh et al. (2004), who argued that these model fit indices are only recommendations and should not be viewed as universal truths.

AVE evaluates the level of variance between a concept and measurement error, and values above 0.7 are regarded as extremely good, although a level of 0.5 is appropriate. In this study, the AVE values of all factors are less than 0.5, with the exception of two: literacy competence and learning to learn competence. Reliability measured by Cronbach's alpha is more biased than reliability measured by CR. Because of this, CR is also considered. CR levels greater than 0.7 are considered very good. However, if an AVE value is less than 0.5, but the CR is greater than 0.6, the construct's convergent validity is considered acceptable (Fornell & Larcker, 1981). Therefore, LLLCS has excellent convergent validity.

The measurement of construct validity indicates that the internal relationships between function as intended. First, it shows the strongest structural validity, as CFA supports the European framework's eight components of lifelong learning. CFA shows that the factors of LLLCS are literacy competence, multilingual competence, competence in mathematics and science, digital competence, learning to learn competence, citizenship competence, entrepreneurship competence and cultural competence. Second, construct validity can be considered to show the reliable and valid convergence with the assessment of both AVE and CR. Overall, the findings show that the measure has strong reliability, face validity, content validity and construct validity. These findings indicate that our LLLCS, with eight components and 27 items, is appropriate for use in future research.

Among the strengths of this instrument is its theoretical use of the European Framework for Lifelong Learning competencies, as well as its reliability, face validity, content validity and construct validity. As a result, it can be a significant step toward developing a more standardised way of measuring lifelong learning competencies.

The small sample of teacher trainers used for testing the instrument was a limitation of this study. In addition, our trustworthy and dependable instrument, which included generalised questions regarding lifelong learning competencies, is a translated item. As a result, we recommend that further study should be carried out among teachers and teaching students with a larger number of participants. We also advise that a small number of adaptations be made when translating our instruments into other contexts, as providing basic questions makes it easier to adapt the instrument to new usage contexts (Sørensen et al., 2022). Finally, various forms of validity, such as criterion postdictive validity, criterion concurrent validity and criterion predictive validity, could be used to evaluate future versions of the LLLCS.

4.7. Conclusion

The current study's objectives were to construct a theoretically standardised LLLCS for teacher trainers and to conduct an empirical analysis of its reliability and validity. Earlier reports only include the results of the use of instruments without indicating CFA results. In addition, there is a need for an LLLCS for teacher trainers in the Myanmar context, so we developed one and translated it into Burmese.

Our findings extend previous research tools show that they are consistent with the widely expressed view of the psychometrics. The findings of this study identify various avenues for future research. It offers suggestive evidence in favour of conducting research among the teachers and pre-service teachers with a larger sample size. We recommend that a few adaptations must be considered when translating our instruments into other contexts, with reference to the eight domains adopted by the European Commission. Future LLLCS should be assessed using other forms of validity, such as criterion predictive validity, criterion postdictive validity and criterion concurrent validity. In any future study, it is important to take the COVID-19 pandemic into consideration. The dramatic transitions associated with this event affected trade, transportation, tourism, teaching learning techniques, medical treatment and social communication. As the world adapts to this new normal, the pandemic will require modernisation of the instruments in all research areas.

At a policy level, this study can be used to identify the competencies for lifelong learning in all educational staffs. It will be beneficial for policymakers to apply the eight key competencies of the European framework into Myanmar's education system. To the best of our knowledge, this is the first tool based on the European framework that satisfies standardised psychometrics in the field of lifelong learning research, as well as in the Myanmar context. The

overall results show that this scale has high scores for validity and reliability and that it could be utilised as a trustworthy and precise instrument to estimate teacher trainers' competence for lifelong learning.

5. QUANTITATIVE PHASE

5.1. THE REGRESSION MODELS FOR LIFELONG LEARNING COMPETERNCIES FOR TEACHER TRAINERS

5.1. 1. Introduction

Technology, education, health, economy, agriculture, and science are all changing rapidly in the contemporary world. It is impossible to know what will happen in the future. Some current theories are likely to be partially wrong. To describe changes in assumptions, Kuhn (1997) introduced the concept of the paradigm shift. He used this term to refer to science, but his idea is now used in reference to many academic fields, including science, medicine, technology, education, sociology, and philosophy.

Today's youth require talents and new fluencies due to the profound changes that have taken place in our society. Education faces these challenges as well. Because the skills required to have a place in today's workforce change so quickly, the ability to work and live together must constantly be rebuilt. No education system can keep up with this necessity. However, similar skills are required across formal education to career advancement and lifelong learning, such as collaboration, critical thinking, communication, creativity, and problem-solving, which can be expected as twenty-first-century skills to live with the changes and the new normal. The guiding goal for the future revitalization of the teaching profession should be lifelong learning.

The development of a lifelong learning policy includes improved and focused in-service education for teachers as a key component (Coolahan, 2002). To deal with the issues of the globalized era, it is essential that teachers be lifelong learners. A lifelong learner embraces learning and possesses the competencies necessary for their lifetime. Lifelong learners are also flexible and happy in adapting themselves to changes caused both by themselves and by their social environment (Demirel, 2009). Restructuring the education system is essential to constructing a society of lifelong learners (Pilli et al., 2017). It provides teachers with newfound abilities, motivates them, and inspires them to continue learning throughout their lives. As a result of this, it assists teachers to become into passionate learning enthusiasts who are receptive to new concepts. School environments can be made more effective by teachers who are well qualified with lifelong learning skills. A teacher's lifelong learning skills are closely associated with the quality of the educational system and with the quality of the teacher. Teachers have important role to play in educating lifelong learners. Developing learning

competencies will help teachers support their students in becoming lifelong learners. The teacher education pillar is undoubtedly the most important component for teachers in gaining lifelong learning competencies. Helping prospective teachers become lifelong learners will enable them to be professionals and develop lifelong learning competencies (Selvi, 2011). It is imperative that teacher trainers develop these competencies first if they are to nurture future teachers. Therefore, research in teacher education is essential to investigate the factors that are affecting lifelong learning competencies of teacher trainers (Coolahan, 2002).

Significance of the study

Several scholars have identified the factors that can affect lifelong learning abilities, such as the work of Bath & Smith (2009) on tendencies for lifelong learning among university students. Buza et al.(2010) investigated perceptions of lifelong learning and suggested that education can be organized to ensure quality and lifelong learning. Latif et al. (2012) found four aspects that can contribute to the development of lifelong learning skills: curricular structure, the institution's resources, learning and instruction, and the assessment system. Müller & Beiten (2013) pointed out the importance of learning strategies in lifelong learning. Lavrijsen & Nicaise (2017) described the importance of external barriers for explaining inequalities in students' lifelong learning participation. Yen et al. (2019) discovered the forecast of personal learning environment management in fostering lifelong learning. Deveci (2019) investigated interpersonal communication in the learning and teaching environment as a key indicator for current and future engagement in lifelong learning. Shin & Jun (2019) studied how individual and organizational factors influence the lifelong learning competencies of elementary teachers. Grokholskyi et al.(2020) studied the role of personality traits and metacognitions in the acquisition of lifelong learning competency. Yildiz-Durak et al.(2020) predicted certain demographic and professional variables in relation to occupational burnout to measure teachers' lifelong learning tendencies. Zuhairi et al. (2020) discovered the challenges in open universities in terms of improving the lifelong learning. Karataş et al.(2021) investigated the relationships between teachers' teaching beliefs, lifelong learning affinities, and change tendencies. Yap & Tan (2022) evaluated chemical engineering students' lifelong learning competencies during online learning in relation to the COVID-19 pandemic. Sen & Durak (2022) examined the lifelong learning tendencies of English teachers, their professional competencies, and their self-efficacy in integrating technology. Deveci (2022) examined the impact of the pandemic on the lifelong learning skills of university students. Matsumoto-Royo et al. (2022) predicted assessments that fostered the improvement of metacognition abilities

and encouraged lifelong learning. Additionally, Arslann (2022) indicated that people should participate in lifelong learning activities regardless of their formal education, and their awareness of their own learning should be improved.

In these studies, researchers considered the effect of background factors such as age, educational status, gender, years of work experience, the overall number of learners being taught, the type of school, and the socioeconomic status of the participants on lifelong learning competencies. However, a discrepancy has arisen between researchers' findings in relation to the impact of demographic factors on lifelong learning competencies. For example, Yap & Tan (2022) found that gender does not have an effect on lifelong learning competencies, while Sen & Durak (2022) found that lifelong learning competencies did differ by gender. Further investigation of this point is necessary.

Previous studies have also had a gap in their participant populations. Most have examined students, primary school teachers, undergraduates, postgraduates, student teachers, teacher educators, administrators, and academic staff, but not much studies were seen in teacher education that examined the factors that contribute to teacher trainers' lifelong learning competencies, with the single exception of Buza et al. (2010) . It is also necessary, to check the variables in the literature, as perceptions about lifelong learning and learning strategies may also influence lifelong learning capabilities. It has not been determined whether lifelong learning competencies are affected by the perceptions of lifelong learning and learning strategies together. With reference to these research gaps, we intended in this study to investigate whether perceptions of lifelong learning and learning strategies could explain teacher trainers' lifelong learning competencies, as well as whether their professional and personal factors could influence these.

Conceptual Framework
Lifelong learning
The broad idea of lifelong learning emerged in the 1970s and had become a topic of widespread interest in the twenty-first century. Lifelong learning is covered by a range of definitions and concepts. In 1996, UNESCO commissioned the Delor's report on lifelong learning (Delors et al., 1998), the first policy development in the field. The concept of lifelong learning is a key to the twenty-first century, according to this report. The Organisation for Economic Cooperation and Development (OECD) is working on the first two pillars of Delor's report, which emphasizes lifelong learning. In its simplest form, lifelong learning refers to all

activities that are developed to upgrade the knowledge and skills of those who participate in them from infancy until death (Gonczi, 2007).

According to Fischer (2000), lifelong learning is more than training or continuing education. A lifelong learning system, on this conception, should enable a variety of learning opportunities, including the exploration of conceptual understanding and the narrowing of the practical application of knowledge, through a variety of contexts, such as academic education, informal lifelong learning, and technical and industrial training. Lifelong learning is a continually stimulating process that encourages and equips people to learn all the knowledge, values, abilities, and understanding that they will require throughout their lives and that they will use in a range situation, function, and context, according to the European Lifelong Learning Initiative (Watson, 2003).

The components of lifelong learning and its definition vary among academics. Drawing on different perspectives on the concept of lifelong learning, scholars described the important dimensions of lifelong learning as profession, social integration and engagement, and personal growth and autonomy (Shrestha et al., 2008); personal dimension, professional dimension, and political dimension (Smith, 2015); or lifelong learning for teachers and higher and higher levels of education and harmonization of learning activities (Kálmán, 2016).

A precise theory of lifelong learning is still lacking, although the concept and its elements have developed significantly. A review of the literature shows that scholars attempted to apply a variety of theories to lifelong learning, including the comprehensive theory (Bagnall, 2017), the theory of transformative learning (Eschenbacher & Fleming, 2020), and theories of societal learning (Osborne & Borkowska, 2017). A theory of lifelong learning, according to Fischer (2000), must take into account the new learning structures needed to keep up with the rapid and significant changes in the nature of educational and occupational requirements. It must facilitate a range of learning opportunities, including the initial inquiry of conceptual comprehension and the condensation of the practical application of knowledge. Lifelong learning as a policy statement would struggle to achieve whatever objectives it promises due to a lack of specific ideas and sparse empirical research, according to Edwards et al.(2002). Steffens (2015) posits that connectivism and generativism can better characterize and explain lifelong learning in the technological age, although no single theory of learning can adequately handle all forms of lifelong learning.

Lifelong learning competencies

The specific knowledge that students gain during their formal schooling process does not include lifelong learning skills (Dong, 2004). Selvi (2010) defines lifelong learning skills as that which enables individuals to continue their own learning even after they complete formal education. These competences are used by teachers to boost their professional performance and personal growth.

Other researchers have characterized various dimensions of lifelong learning competencies. Taking into account the needs for a fulfilling personal life, a healthy standard of living, employment, active citizenship, and civic participation, the European Union Commission established eight competencies as recommended, namely, literacy, linguistic diversity, mathematical and scientific skills, digital competencies, the capacity to learn new skills, innovation, active citizenship, and expression of cultural diversity (European Council, 2006). In relation to these eight competences, Uzunboylu & Hürsen (2011) proposed six dimensions of lifelong learning competencies: as decision-making competences, competencies of collecting information, competencies of self-management, learning how to learn competencies, digitally competence, and innovation competencies. In addition, lifelong learning competencies are among teacher competencies. The general framework of teacher competencies has been described in nine dimensions, namely competencies in the profession, in research, in curriculum, in lifelong learning, in culture, in emotion, in communication, in ICT, and in environment (Selvi, 2010). She explained that for self-improvement and career development, educators must possess these abilities.

Learning strategies

Certain standards must be held in common for the reorganization of current education systems and the construction of lifelong learning. Burlakova et al. (2019) described the best-known standards as follows.

- The orientation of the education system should be based on the individual, their unique personalities, and their basic needs, of which the primary needs are lifelong self-improvement, self-development, and self-realization.
- It should be possible for every individual to access any form and level of education, regardless of their social status, nationality, race, or physical condition.
- Such education must be flexible, responsive to the educational needs of the population, and focused on special interests, learning styles, and rates of potential students learning.

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- Every individual must have the right to choose their own strategy for further education after graduation among the variability of educational services.
- The integration of different education types and the creation of a holistic educational segment must engage the adult population of the country as students.
- At any stage in their lives, individuals should be able to use information technology to enhance their education.

According to these standards, it can be seen that learning strategies have played an important role in determining lifelong learning and lifelong learning competencies. A variety of learning strategies exist, such as cooperative learning strategies, collaborative learning strategies, repetitive learning strategies, and self-regulated learning strategies. Learning strategies are described in our study as overall learning strategies. Learner practices that are meant to affect how they process learning are known as learning strategies (Mayer, 1988). Endres et al.(2021) indicated the importance of learning strategies. The basis for how people typically learn is formed early in life, as are the learning abilities that later develop. A person's learning style in later life is significantly influenced by their childhood strategies and practices. Many studies have focused on the relationship between learning strategies and academic achievement (Reyes et al., 2022; Vermunt & Donche, 2017). Vilppu et al.(2022) showed that learning strategies are important for success after university and in the workplace, and their impacts are not limited to academic achievement. Therefore, learning strategies should consider lifelong learning and the implementation of lifelong learning competencies.

Context of the study

There is no strategic plan to implement lifelong learning competencies for the teachers in Myanmar. There are several promising examples from Southeast Asian nations, including Myanmar, as indicated in a report of Yorozu (2017) that outlines the essential characteristics for creating a culture of lifelong learning for all. In addition to promoting equitable and comprehensive quality education, these initiatives are intended to resolve the region's educational challenges. Various lifelong learning policies and strategies are found in collections of policy documents (Yorozu, 2017). The lifelong learning policies and strategies developed by Myanmar are not found in that collection.

However, Yorozu (2017) reported that the first step in implementing lifelong learning in Myanmar has begun with alternative education. In 2016, the Department of Alternative

Education was established, which draws an alternative education pathways map. Its mission is to provide particular groups with equally affordable, accredited, high-quality education that will develop their skills for the future development and long-term viability of Myanmar society. This new approach to education offers students a variety of possibilities to pursue their career ambitions and other incentives for lifelong learning. This strategy was developed in accordance with the Myanmar National Education Law, which prescribes that a main principle of education is that every citizen has the right to education and opportunities for lifelong learning shall be created. It establishes equivalency programs for the non-formal and formal education systems and makes important policy commitments such as for basic literacy programming, implementation, and the opportunities for lifelong learning with local and nongovernmental partners ((National Education Law (2014, Parliamentary Law No. 41) 1376, New Moon of Thadingyut 7, 2014).

Reinforcing the lifelong learning of teacher trainers is essential to be able to produce quality teachers. Smith (2015) showed that university educators' academic advancement is an ongoing process that is built on the idea of lifelong learning. Teacher education colleges have an important role to play here in helping teachers develop lifelong learning competencies.

5.1.2. Aims and Research Questions

This study's main purpose is to determine whether perceptions of lifelong learning and learning strategies can be used to explain teacher trainers' lifelong learning competencies and establish whether personal and professional factors also have an effect on them. The following specific research questions guide this study.

1. Do perceptions of lifelong learning, learning strategies, and background factors affect the lifelong learning competencies of teacher trainers?

2. How far do personal factors, perceptions of lifelong learning, and learning strategies predict lifelong learning competencies?

3. How far do professional factors, perceptions on lifelong learning, and learning strategies predict lifelong learning competencies?

4. Which prediction model is the most appropriate for lifelong learning competencies?

5.1.3. Method
Research design and procedure

This study involves a correlation research method. Because the goal of this study is to determine variables that will predict a result or set of criteria (Creswell, 2012), a correlation research method was chosen. Based on the research gap noted above, we conducted this research with teacher trainers. Before distributing questionnaires, we identified the appropriate research tools and question items, adapted and translated them, and then established their reliability and validity.

The Institutional Review Board of the Doctoral School of Education, University of Szeged approved the study in accordance with institutional ethical guidelines. In order to distribute the questionnaires, we attempted to obtain permission from the principals of Education Degree College. All participants were informed that their participation was voluntary, and their answers would remain confidential. They were made aware of the objectives of the study, the types of instruments being used, and the proper way to complete each instrument. Further, they also informed that their participation would not be used for anything outside the research activity.

Participants

The population of this research was teacher trainers working at education colleges in Myanmar. There are 25 education colleges in Myanmar: 13 in upper Myanmar and 12 in lower Myanmar. We applied the most basic of the probability sampling techniques, simple random sampling. There are 1058 teacher trainers at these 25 education colleges, to an administrative officer at the Ministry of Education, Myanmar. The research sample was composed of 232 teacher trainers at different education degree colleges in both regions. This sample size is acceptable at 95% confidence level, where sampling error is permitted between 5% and 8% in social science. Table 1 shows the demographic information. It should be noted that the number of female teacher trainers was much more than the male, reflecting the broader gender pattern in teacher education in Myanmar.

Table 5. 1Demographic Factors of Teacher Trainers

Participants' demographic factors		frequency	%
Personal factors	Gender	male	25	10.76%
		female	207	89.22 %
	Age	20-30 years	57	24.57%
		31-40 years	88	37.93%
		41-50 years	32	13.79%
		Over 50 years	55	23.71%
Professional factors	Region	Lower	60	25.86%
		Upper	172	74.14%
	Education level	Bachelor	51	21.98%
		Master	167	71.98%
		Phd	14	6.03%
	Teaching Service	1-5 years	88	37.93%
		6-10 years	64	27.59%
		11-15 years	37	15.95%
		Over 15 years	43	18.53%
Total			232	100%

Instrument

The following three research instruments were used to investigate our research questions. The psychometric properties of the questionnaires were also evaluated.

Lifelong Learning Questionnaire

To examine the perceptions of teacher trainers on the lifelong learning, we used the Perceptions of Lifelong Learning Questionnaire, which was developed by Buza et al. (2010). After adapting and translating it into the context of our study, this instrument is one dimensional and composed of 9 items (e.g. "Lifelong learning can improve personal and professional developments."). Its reliability was high, α = 0.84 and model fitness are also acceptable (Satorra–Bentler chi-square = 86. 67; df = 27; p ≤ 0.001; robust CFI = 0.86; robust TLI = 0.81; robust RMSEA = 0.09; SRMR = 0.07).

Lifelong Learning Competencies Scale

The 27-items Lifelong Learning Competencies Scale (LLLCS), based on the European framework, was used to investigate the lifelong learning competencies of teacher trainers. The LLLCS has eight domains, namely, literacy competence, with three items (e.g. "aware of the main types of verbal interaction, a range of literary and non-literary texts, and the main features of different styles and registers of the Myanmar language"); multilingual competence, with three items (e.g. "appreciate of cultural diversity, an interest and curiosity about different languages and intercultural communication"); mathematical competence and competence in science, technology, and engineering, with six items; digital competence, with three items; learning to learn competence, with three items; citizenship competence with three items; entrepreneurship competence, with three items; and cultural awareness and expression

competence with three items. We checked the instrument's reliability and validity, finding that it had high reliability ($\alpha = 0.89$) and acceptable validity (Satorra–Bentler chi-square = 381.014; df = 296; $p \leq 0.001$; robust CFI = 0.92; robust TLI = 0.91; robust RMSEA = 0.05; and robust SRMR = 0.06).

Teachers' Learning Strategies Questionnaire

To identify the learning strategies used by the participating teacher trainers, the Learning Strategies scale derived from the Teaching and Learning Strategies Questionnaire designed by Abrami et al.(2005) was used, which consists of 16 items (e.g. "Set own learning goals"). The original questionnaire includes four subscales: students' learning strategies and approach to teaching, portfolio use, and technology experience. In accordance with the context of the study, we adapted students' learning strategies into teachers' learning strategies. The scale had high reliability ($\alpha = 0.92$) and good fitness (Satorra–Bentler chi-square = 224.86; df = 104; $p \leq 0.001$; robust CFI = 0.90; robust TLI = 0.82; robust RMSEA = 0.07; SRMR = 0.08).

These questionnaires were graded on a 4-point Likert scale ranging from 1 (strongly disagree) to 4 (strongly agree). When we collected these data from the teacher trainers, we also collected the demographic information, in an instrument with dichotomous and multiple-choice questions to obtain personal and professional information regarding gender, age, region of the education degree colleges, level of education, and teaching services as a teacher trainer.

Data analysis

The data were analyzed using the statistical package of R version 4.1.0 (2021-05-18). Creswell (2012) suggested multiple linear regression analysis was appropriate for the prediction research design. Multiple linear regression analysis (MLRA) was carried out with lifelong learning competencies as the dependent variable and personal and professional variables, including perception of lifelong learning and learning strategies, as the independent variables. First, we analyzed all of the independent variables together to address the first research question. Second, we chose the personal factors (gender and age), perception of lifelong learning, and learning strategies to address the second research question. Third, we selected professional factors (college region, education level, and teaching service), and perception of lifelong learning and learning strategies to solve the third research question. As a result of computing the MLRA three times, three alternative regression models were derived. To evaluate the multicollinearity among the predictors of these three regression models, variance inflation factor (VIF) values were also taken into consideration. Finally, analysis of

variance (ANOVA) was also used to compare the outcome models and decide the best model to address the fourth research question.

5.1.4. Results

To predict the LLL competencies of the teacher trainers, all variables, including both personal (gender and age) and professional (education level, regions, and teaching experience) factors, perceptions of LLL, and learning strategies were treated as independent variables, while the LLL competencies are considered the dependent variable. According to multiple linear regression coefficients, it was found that perceptions of LLL ($\beta = 0.46$, $p < .001$) and learning strategies ($\beta = 0.22$, $p < .001$) were significant positive predictors, while the location of the education degree college ($\beta = -0.051$, $p < .01$) was a significant negative predictor. The overall model fit was $R^2 = 0.73$, meaning that the three independent variables explained 73% of the differences in the acquisition of the acquisition of lifelong learning competencies. These three independent variables predict LLL competencies significantly well; $F(224) = 89.75$, $p < .001$. The results of the model are summarized in equation 1. This model indicates that a 0.46% increase (± 0.029907) in the lifelong learning competencies is correlated with a 1% increase in perception of lifelong learning, a 0.22% increase (± 0.032770) in the lifelong learning competencies is associated with a 1% increase in learning strategies, and a 0.05% (± 0.0320057) decrease in lifelong learning competencies is correlate with a 1% increase based on the region of the college. This is our first model of lifelong learning competencies.

Equation 1 First Regression Model for LLLC

$$\text{LLL competencies} = 103 + (0.46 * \text{perception on LLL}) + (0.22 * \text{learning strategies}) - (0.05 * \text{region}) \pm 0.121781$$

To develop the second model, personal factors, such as gender, age, perception of lifelong learning, and learning strategies were considered as independent variables. The MLRA showed that perceptions of LL ($\beta = 0.46$, $p < .001$) and learning strategies ($\beta = 0.22$, $p < .001$) were significant positive predictors. Using these two independent variables, LLL competencies could be predicted significantly well: $F(227) = 105.7$, $p < .001$. Overall, $R^2 = 0.72$, indicating that these two independent variables explained 72% of the lifelong learning competencies. The resulting model described in equation 2 means that lifelong learning competencies increase by

0.46 percent (± 0.029916) for every 1% increase in perception of lifelong learning, and they increase by 0.22 percent (± 0.032970) for every 1% increase in learning strategies.

Equation 2 Second Regression Model for LLLC

$$\text{LLL competencies} = 93 + (0.46 * \text{perception on LLL}) + (0.22 * \text{learning strategies}) \pm 0.114392$$

For independent variables in the third model, professional factors (education level, region, and teaching experience), perception of lifelong learning, and learning strategies were considered. The results showed that perceptions regarding LL ($\beta = 0.46$, $p < .001$) and learning strategies ($\beta = 0.23$, $p < .001$) were significant positive predictors, whereas the region of the education degree colleges ($\beta = -0.051$, $p < .01$) and teaching experience ($\beta = -0.01$, $p < .01$) were significant negative predictors. Taking these four predictors into account, 73 percent of the variation in lifelong learning competency development ($R^2 = 0.73$) can be explained. The predictors have a significant influence on LLL competencies: $F_{(226)} = 126.4$, $p < .001$. The outcome model as shown in equation 3 indicates that 1% more perception of lifelong learning is corelated with a 0.46% (± 0.029627) increase in lifelong learning competencies, a 1% increase in learning strategies is corelated with a 0.23% (± 0.032210) increase in lifelong learning competencies, and a 1% increase based the region of the college is correlated with a decrease in lifelong learning competencies by 0.05% (± 0.019950), while a 1% increases in teaching experience is correlated with a decrease in lifelong learning competencies by 0.01% (± 0.007236).

Equation 3 Third Regression Model for LLLC

$$\text{LLL competencies} = 108 + (0.46 * \text{perception on LLL}) + (0.22 * \text{learning strategies}) - (0.05 * \text{region}) - (0.01 * \text{experience}) \pm 0.102910 \qquad (3)$$

To check for multicollinearity between the predictors of each model, the VIF was computed. All variables in each model with VIFs lower than 2 showed no multicollinearity, according to (2013). ANOVA was used to compare the three models. When comparing the first and second models, the resultant p-value ($p < .01$) is sufficiently low (usually smaller than 0.05). Accordingly, the more complex model (first model with region, perception of lifelong learning, and learning strategies) outperforms the simpler model (the second model).

Comparing second and third models showed a significant difference (p < .001) between them, so a more complex model (the third model with region, and teaching experience, perception of lifelong learning, and learning strategies) was preferred. Furthermore, no significant difference was found between first and third models. While R^2 values were the same for both the first and third models, the standard error of regression of the third model ($\varepsilon = 0.102910$) was the least for it among all three models.

5.1. 5. Discussion

The literature clearly shows a wide range the impact of personal and professional factors, perception of lifelong learning, and learning strategies in relation to LLL competencies. In general, all of our regression models indicated that perceptions regarding lifelong learning and learning strategies are significant predictors of lifelong learning competencies. The regression models of this study were aligned with those of previous studies that examined attitudes and LLL competencies (Tenekeci & Uzunboylu, 2020), knowledge sharing and LLL competencies, learning readiness (Shin & Jun, 2019), learning activities (Aykaç et al., 2020), learning strategies (Gonczi, 2007; Kavaliauskiene & Kaminskiene, 2009; Müller & Beiten, 2013). On the other hand, Yap & Tan (2022) found that perception does not affect lifelong learning competencies, although interest and receptivity to learning matter to LLL competencies. Knowing and understanding one's preferred learning strategies is important in all contexts. To achieve specific work or career goals, learners must be aware of their own competencies, abilities, and qualifications (European Council, 2006; Hozjan, 2009).

All three of our regression models indicated that lifelong learning competencies are not related to the personal factors such as gender and age. Several studies have shown that lifelong learning competencies do not differ by gender (Aykaç et al., 2020; BÜLBÜL, 2020; Sahin et al., 2010; Yap & Tan, 2022) and age (Ayanoglu & Guler, 2021; Sen & Durak, 2022) while these studies suggest differences between lifelong learning abilities in terms of gender (Pilli et al., 2017; Sen & Durak, 2022; Shin & Jun, 2019).

When professional factors are taken into account, lifelong learning competencies also depend on the region, according to our first and third models. In addition to region, the third model of this study includes teaching services as a factor that can predict lifelong learning competencies. These two models are in line with previous studies showing that lifelong learning competencies differ by region (Yildiz-Durak et al., 2020) and teaching service (Bozat et al., 2014; Kuzu et al., 2015; Yildiz-Durak et al., 2020). It is worth noting that our models

contrast with these studies, which show that the following professional factors are not related to lifelong learning competencies: region of the college (Ayanoglu & Guler, 2021; Aykaç et al., 2020; Sen & Durak, 2022) and teaching service (Aykaç et al., 2020; BÜLBÜL, 2020; Sen & Durak, 2022). Among the professional factors we examined, level of education is not very important for learning competencies in our models. This finding contradicts a previous study that reported a significant difference between lifelong learning competencies by education level (Ayanoglu & Guler, 2021). On the other hand, other past studies did find that education level does not affect lifelong learning competencies (Aykaç et al., 2020; Sen & Durak, 2022; Yap & Tan, 2022).

After assessing these three models, we compared using computing their VIFs and ANOVA analysis to determine the best model. The values of VIFs showed that there was no multicollinearity among the variables of any model. The ANOVA could not determine the best model among the three. When the standard error of regression was also taken into account, the third model was shown to have the lowest error. These findings show the third model with region, teaching experience, perception of lifelong learning, and learning strategies may be the best regression model for predicting LLL competencies in teacher trainers. In other words, lifelong learning competencies are influenced by the region, teaching experience, perception on LLL, and learning strategies.

Using the third model, we discuss investigate possible possibilities that have been influenced by the context of the study, such that the relationship between region, year of teaching experience, and LLL competencies of teacher trainers are reciprocal factors. In certain regions, educational degree colleges have only been operating in the last few years and have inadequate facilities and resources, which may impact those who work there. In the OECD reports as well, it is noted that external assistance, such as that provided by higher education institutions, educational centers, and regional or specialized support teams, plays an important role. It is particularly important in workplaces where geographic and occupational isolationism pose a threat (Coolahan, 2002). Additional teaching experience relates to higher responsibilities and the lower motivation to learn. Yildiz-Durak et al. (2020) suggested that regular in-service training should be provided to teachers to eliminate a chasm in LLL tendencies based on regional differences and teaching experience.

This research may be useful for establishing a practical policy to implement the lifelong learning competencies within the formal and non-formal education sectors. According to the

World Bank, establishing effective lifelong learning programs require significant improvements to both administration and funding in both education and training. In many OECD countries, governments are already working to develop adaptive policy and regulatory structures that incorporate a broader spectrum of institutional actors, which had previously been based only on public funding and public education (Wheeler, 2003). The necessity of creating national strategies for lifelong learning was highlighted by the European Commission when it evaluated the results of the education reforms in 2008. It is also important to take local issues into consideration when establishing the lifelong learning in Myanmar. National lifelong learning strategies should involve step-by-step guidelines that focus on teacher education, providing awareness, and formal and non-formal training, as well as facilitating opportunities for informal learning.

Our regression models indicate that it would be beneficial to provide teacher trainers with training activities to raise their awareness of lifelong learning. Enhancing teacher trainers' perception of lifelong learning will enable them to upgrade key lifelong learning competencies. The lifelong learning competencies of teacher trainers should also be promoted by encouraging them to adopt their preferred learning strategies. When appropriate learning strategies are determined, trainings that support the implementation of lifelong learning competencies will be more effective. Our best regression model suggests that all of these strategies should be implemented with care, such that experienced service teacher trainers from all regions be incorporated. Higher lifelong learning competencies in teacher trainers provide superior opportunities for student teachers at education degree colleges to gain those competencies. These student teachers will certainly become basic education teachers, and they will need to produce young students with the updated competencies needed to continue to stay on top of the world's changing trends.

5.1. 6. Limitations and Suggestions

A number of drawbacks in this study are important to mention. First of all, our sample was different from that of past comparable studies, which have primarily focused on school teachers, university teachers, college students, and prospective teachers, whereas ours is composed of teacher trainers working in teacher education. This may have led to some variations in interpretation between samples. Second, the eight separate domains of the LLL competencies are not measured in detail in relation to personal and professional factors, perceptions of LL or learning strategies.

The conflicting findings of this study indicate that further investigation is needed to consider the lifelong learning competencies of teacher trainers in the contexts of different countries. In future studies, it will be possible to examine how perceptions regarding LLL and/or learning strategies affect the different domains of LLL competencies. The relationship between the literacy competence that belongs to LLL competencies and perception of LLL, for example, is also worth considering. It is likely, however, that the findings of this present study will also be helpful to close the disparity in lifelong learning research in teacher education. An example of possible variety of results could be produced, depending on the context, though a follow-up interview, providing an opportunity to identify further factors that might contribute to or hinder LLL competencies.

5.1. 7. Conclusion

This study was conducted to predict the impact of personal and professional factors, perception of lifelong learning, and learning strategies on lifelong learning competencies of teacher trainers. The results show that personal and professional factors, as well as gender, age, and education level, play little role in determining lifelong learning competencies. Lifelong learning competencies depend on the region where the given individual is working, their teaching experience, how they perceive the lifelong learning, and how they use learning strategies for their teacher competencies. Our findings show some differences from previous findings, with potential contextual justifications for our findings. In addition, our findings may prove useful both on a national and practical level. Our study had acknowledged limitations, which lead to suggestions for further research.

5.2. RELATIONS AMONG THE PERCEPTION OF LIFELONG LEARNING, LIFELONG LEARNING COMPETENCIES, AND LEARNIG STRATEGIES OF TEACHER TRAINERS IN MYANMAR

5.2.1. Introduction

Many scholars elucidated a range of concepts related to lifelong learning (Delors et al., 1998; do Nascimento et al., 2018; European Commission, 2001; Jarvis, 2009; Tuijnman et al., 1996; UIL, 2017; Walters et al., 2014; Yang et al., 2015; Yen et al., 2019b; Yorozu, 2017). The literature and authoritative organizations, such as the Organization for Economic Co-operation and Development, European Commission, and United Nations Educational, Scientific and Cultural Organization, provided many related references and official documents, respectively. Moreover, they described the evolution of lifelong learning and its difference from lifelong education. Lifelong learning breaks the limits of education (Edwards & Usher, 1998; Fischer, 2000) and its importance continues to grow in the new generation (Majhanovich & Brook Napier, 2014), even though it has limited theoretical support (Edwards et al., 2002). Lifelong learning could, however, be explained by connectivism, generativism (Steffens, 2015), and rhizoactivity (Dae, 2007). Edwards et al. (2002) also pointed out that without empirical research, lifelong learning would not accomplish its objectives. Having criteria or indicators of how lifelong learning can be implemented in inclusive ways: informal, non-formal, and formal learning becomes important.

After extensive and in-depth discussions about lifelong learning, a few nations developed lifelong learning strategies and policies (Rambla et al., 2020; Tuparevska et al., 2020a, 2020b; Valiente, Capsada-Munsech et al., 2020; Valiente, Lowden et al., 2020). As such, coping with national policies is important for educational institutions. Instead, of being institutions that only support formal education, they should aim to be institutions of lifelong learning. The COVID-19 pandemic forced the education sector to achieve progress to maintain learning to cope with the shifting world. Thus, the time is right for preparing entire generations to acquire lifelong learning competencies.

In the context of the study, Myanmar lacks policies or strategies for addressing lifelong learning. Nevertheless, alternative education is the first step in adopting lifelong learning in Myanmar (Yorozu, 2017). The National Education Law (2014) establishes that the core premise of education is the provision of the right to schooling and opportunities for lifelong learning for every citizen. It also creates equivalency programs for formal and informal

education systems and formulates significant policies for the implementation of basic literacy programs and opportunities for lifelong learning through local and nongovernmental partners. Lifelong learning competencies are one of the teacher competencies (Selvi, 2010), which are an essential component of broad education reforms in Myanmar that aim to improve the quality of teachers and teaching in the entire system. Although no standardized framework exists regarding lifelong learning for teachers, the Teacher Competency Standards Framework for Myanmar was established in 2018 (Dabrowski et al., 2020). However, it exhibits a huge overlap with the Key Competences for Lifelong Learning of the European Reference Framework (European Council, 2006). Both frameworks illustrate the knowledge, skills, attitudes, and values necessary for addressing global changes and shaping a sustainable future.

Lifelong learning competencies should be assessed to understand lifelong learning as a measurable outcome (Council of the European Union, 2018). Competencies are categorized as literacy, multilingual, science and mathematical, digital, learning to learn, citizenship, entrepreneurial and cultural competencies. Definitions of each competence are described as follows (Commission, 2019; European Council, 2006).

Literacy competence is the capacity to recognize, comprehend, communicate, produce, and interpret ideas, sentiments, information, and opinions in oral and written forms using visual, aural, and digital media. The native tongue, the official language of a country or region, and/or the language of communication all contribute to its development. In this scenario, literacy competence can be acquired in a wide range of societal and cultural contexts, including education, training, employment, family life, and leisure.

Multilingual competence is the capacity to use a variety of languages successfully and appropriately for communication. Understanding, expressing, and interpreting ideas, concepts, ideas, emotions, information, and perspectives in both spoken and written form are the foundations of communication in foreign languages.

Mathematical competence is the capacity to acquire and utilise numerical concepts and reasoning to a variety of issues in real-world contexts. The focus is on method and activity in addition to information, building on a strong foundation of numeracy. The capacity and readiness to apply mathematical forms of thought and presentation are, to various extents, components of mathematical competence. The capacity and inclination to explain the natural

world such as research and observation, in order to formulate questions and come to conclusions supported by evidence, is referred to as ***competence in science***.

Digital competence refers to the integration and utilisation of digital technology for learning, at profession, and for social activity in a robust, critical, and ethical way. It covers topics like data and information education, teamwork and communication, media literacy, media creation, online digital creation, safety and property rights.

Learning to learn competence is the capacity for self-reflection, effective time and information management, and teamwork in a better direction, maintain resilience, and manage one's own learning. It includes the capacity to deal with complexity and uncertainty, to learn new things, to encourage and preserve one's mentally and physically health, to live a health-conscious, future-focused life, to show empathy, and to handle disputes in an inclusive and encouraging environment.

Citizenship competence is the ability to participate fully in civic and social life and engage as responsible. It depends on one's awareness of concepts and systems in economic, social, legal, and political field, as well as of sustainability and globalisation.

Entrepreneurial competence is the ability to capture chances and develop ideas into commodities that have benefit for other people. It is built on the ability to design and manage initiatives that have cultural, social, or economical worth by using originality, rational thought, and challenge skills.

Competence in cultural awareness is understanding and respecting the diverse artistic and other culture that information are imaginatively conveyed and shared in all the other cultures. It entails being actively involved in comprehending, growing, and communicating one's personal opinions as well as one's identity as a member or position in society in a wide range of situations and manners.

Moreover, they are described in terms of sustainability, gender equal rights and opportunity, acceptance to cultural diversity, innovative thinking, and media literacy. Another point of view is that the first three are specific to a particular domain. Their description, adoption into syllabi, and appraisal seem fairly straightforward. The last five relate to domains of generality or transversality (Steffens, 2015). This reference framework utilizes an extensive range of themes, including the roles that critical reflection, innovation, enterprise, conflict, risk

analysis, judgment, and therapeutic emotion management play in each of the eight main skills. Practitioners in education and training can use it as a standard guideline. It creates a shared knowledge of the skills that will be necessary in the present and the future. The reference framework outlines effective strategies for fostering competence growth through cutting-edge teaching strategies, testing procedures, and staff assistance (Commission, 2019; European Council, 2006).

Sahin et al. (2010) applied this lifelong learning competencies framework to measure the levels of the lifelong learning competencies of student teachers. Based on the European Reference Framework, Uzunboylu and Hürsen (2011) proposed six dimensions of lifelong learning competencies, namely, decision-taking, self-management, learning how to learn, innovation, information acquisition, and technology use. Moreover, Coşkuna and Demirel (2010) grouped lifelong learning tendencies under four categories, namely, motivation, perseverance, lack of learning discipline, and absence of interest. Researchers recently focus their efforts on measuring the lifelong learning skills of employees in educational institutions in line with these trends.

Therefore, the current study first analyzed previous empirical studies based on research trends and identified the research gap that the current study intended to fill. The main objective of the study is to investigate the relationships among perception on lifelong learning, lifelong learning competencies, and learning strategies.

5.2.2. Review of Empirical Studies
A review of empirical studies suggested that many studies were conducted to identify the relationships between lifelong learning skills and other factors. Bath and Smith (2009) identified a relationship between lifelong learning disposition and epistemological belief. Moreover, Barros et al. (2013) cited that certain characteristics are related to learning approaches. Uzunboylu and Sarigoz (2015) examined the perception, knowledge, and attitude of students and teachers (Sarigoz, 2016) toward lifelong learning approaches. Alternatively, Ekşi et al. (2020) proved that motivation for success and personal–professional competencies are associated with lifelong learning tendencies. Tenekeci and Uzunboylu (2020) proposed that teachers employed by private schools possessed perpetual learning mindsets and strong abilities in lifelong learning. Şentürk and Baş (2021) examined the influence of changing tendencies on the relationship between teaching philosophies and aptitude for lifelong learning, and Karataş et al. (2021) found that lifelong learning tendencies play a fully mediating role in

the relationship between the learning–teaching approach and readiness for self-directed learning. Other studies pointed to positive significant relationships between lifelong learning disposition and other variables, opinions on self- discipline skills (Nacaroglu et al., 2021), reading motivation (Ayanoglu & Guler, 2021), and technology that integrates self-efficacy and professional competency (Sen & Durak, 2022). Many studies also considered various demographic factors in examining lifelong learning competencies (e.g., Hazar, 2022; Tenekeci & Uzunboylu, 2020; Uzunboylu & Sarigoz, 2015).

These studies demonstrated that a wide range of factors can influence the lifelong learning process. Against this background, the current study examined variables were not considered with respect to lifelong learning competencies. In particular, we focus on the influence of perception and awareness on lifelong learning abilities. The perception of teacher educators of lifelong learning highlighted the development of various abilities, recognition, and problem-solving skills and the comprehension and expansion of learning strategies for the acquisition and application of new knowledge (Buza et al., 2010). In addition, understanding learning strategies is crucial for fostering lifelong learning (Anthonysamy et al., 2020; Bussaman et al., 2017; Endres et al., 2021b; van Laar et al., 2017; van Woezik et al., 2020).

5.2.3. Review of research tools in lifelong learning competencies
In the empirical research on lifelong learning competences, abilities, and skills described above, researchers had created a number of instruments, which other researchers have then adapted to be utilized in various contexts. Before the European framework for core competencies of lifelong learning was proposed, Crick et al. (2004) generated Effective Lifelong Learning Inventory (ELLI) to identify the components of a person's capacity for lifelong learning. Moore & Shaffer (2017) utilized this ELLI to evaluate students' development as lifelong learners during a semester.

After European Commission recommended their lifelong learning framework, Sahin et al. (2010) developed lifelong learning key competencies scales based on this framework with eight dimensions while Uzunboylu & Hürsen (2011) also constructed lifelong learning tendency scale with six dimensions based on this framework.

Sen & Durak (2022) adapted the former one in their study. Besides this framework, Kim et al. (2014) formulated lifelong learning competencies scales based on Delors report and (Shin & Jun (2019) adjusted it to be utilized in their context. On the other hand, some researchers developed the research tools based on the lifelong learning literature; Coşkuna & Demirel

(2010) designed lifelong learning tendency scale which is modified by Karataş et al. (2021) and Pilli et al. (2017) in their context; Kirby et al.(2010) developed lifelong learning scale which is customized by Nacaroglu et al. (2021), Deveci (2022) and Meerah et al. (2011) in order to suit their situation; lifelong learning scale (Bath & Smith, 2009a); there are also another research tools such as interview (Nacaroglu et al., 2021; Simmons & Walker, 2013) and student surveys(Kuit & Fildes, 2014). After Covid, it is noted that the new instrument to measure the lifelong learning abilities was Scale of Interpersonal Predispositions for Lifelong Learning (SICP-LLL) created by Deveci (2019a).

The literature suggested that future studies should simultaneously examine three variables, namely, perception on lifelong learning, lifelong learning competencies, and learning strategies, with demographic factors. The next thing is that there are only a few studies that analyze each competence of lifelong learning in accordance with the European Framework.

5.2.4. Objectives of the Current Study

The objectives of this study are (a) to explore the perceptions of lifelong learning, lifelong learning competencies, and learning strategies of teacher trainers, (b) to investigate the differences among these variables and each competency of lifelong learning according to background factors, and (c) to examine the relationships among the three variables. To accomplish these objectives, we pose five research questions.

1. What are the perceptions of lifelong learning, lifelong learning competencies, and learning strategies of teacher educators?

2. What are the levels of each dimension of lifelong learning competencies of teacher trainers?

3. What are the significant differences in the three variables according to the demographic factors?

4. Are there any significant differences in each level of lifelong learning competencies of teacher trainers according to their background factors?

5. Do strong relationships exist among these variables?

5.2.5 Methods and Materials
Research Procedure

This study adopted an explanatory research design and is a correlational study that tests the direct straight connection between a group of variables (Creswell, 2012). The study used three research tools to measure the three variables. The study then selected, developed, and adapted the three questionnaires. In addition, these instruments were tested for reliability and validity. To distribute the questionnaires, the study obtained permission from the principals of education degree colleges. Upon meeting the teacher trainers, we explained the objective of the study and the questionnaires used. They were also notified that participation was voluntary and that their responses will remain confidential and be used only for the purposes of the study. The Institutional Review Board (IRB) of the Doctoral School of Education, University of Szeged, also endorsed the questionnaires.

Participants

A total of 1058 teacher trainers compose the education degree colleges in Myanmar out of which 300 were selected using the random sampling method. Table 5.1 presents the specific information of the participants.

Table 5.2 Background Factors of Teacher Trainers

Participants' demographic factors		frequency	%
Gender	male	38	12.67%
	female	262	87.33 %
	20-30 years	40	13.34%
Age	31-40 years	80	26.33%
	41-50 years	49	16.33%
	Over 50 years	131	44.00%
Region	Lower	135	45.00%
	Upper	165	55.00%
	Bachelor	91	30.33%
Education level	Master	196	65.33%
	Phd	13	4.34%
	1-5 years	100	33.33%
Teaching Service	6-10 years	43	14.33%
	11-15 years	41	13.67%
	Over 15 years	116	38.67%
Total		300	100%

Instrument

The items of the questionnaires were rated using a four-point Likert-type scale ranging from 1 = strongly disagree to 4 = strongly agree, because lifelong learning concepts are new to most of the teacher trainers. As such, respondents with varied abilities and without the drive tend to prefer a four-point response structure (Nemoto & Beglar, 2014; Asún et al., 2016).

Additionally, we collected background information, including gender, age, level of education level, region of the education degree college, teaching tenure, and subjects taught.

Lifelong Learning Questionnaire

To examine the perception on lifelong learning, we used the Perceptions on Lifelong Learning Questionnaire by Buza et al. (2010). Its reliability was high ($\alpha = 0.84$) with acceptable model fit (Satorra–Bentler scaled chi-square = 86. 67, $df = 27$, $p \leq 0.001$, robust CFI = 0.86, robust TLI = 0.81, robust RMSEA = 0.09, SRMR = 0.07).

Lifelong Learning Competencies Scale

The Lifelong Learning Competencies Scale (LLLCS), which is composed of 27 items and is based on the European Reference Framework, was used to measure lifelong learning competencies. Therefore, it has eight domains. The LLLCS exhibited high reliability ($\alpha = 0.89$) and acceptable validity (Satorra–Bentler scaled chi-square = 381.014, $df = 296$, $p \leq 0.001$, robust CFI = 0.92, robust TLI = 0.91, robust RMSEA = 0.05, robust SRMR = 0.06).

Teachers' Learning Strategies Questionnaire

The Learning Strategies Questionnaire was derived from the Teaching and Learning Strategies (TLSQ) designed by Abrami et al., 2007 and was used examine learning strategies. The scale consists of 16 items. In line with the context, the study adapted the learning strategies for students into those for teachers. The scale displayed high reliability ($\alpha = 0.92$) and goodness-of-fit (Satorra–Bentler scaled chi-square = 224.86, $df = 104$, $p \leq 0.001$, robust CFI = 0.90, robust TLI = 0.82, robust RMSEA = 0.07, SRMR = 0.08).

Data Analysis

The study employed the statistical packages of R studio for data analysis. The study addressed the research questions through descriptive and inferential statistics. Descriptive analysis was performed to measure the three research variables and each competency of lifelong learning competencies. Inferential analysis was conducted as follows: the study conducted an independent sample *t-test* and one-way ANOVA to identify the mean differences in terms of background factors; Dunnett's test was performed to compare the different results among participants; and Pearson's correlation was applied to investigate the association among the three variables.

5.2.6. Results

Perception on Lifelong Learning, Lifelong Learning Competencies, and Learning Strategies of Teacher Trainers

Table 5.2 provides the descriptive statistics obtained using the three instruments. The table implied that the level of perception of lifelong learning is high ($\bar{x} = 3.35$, $SD = 0.40$) on a scale of 1 to 4. The total mean score for the LLLCS was also high ($\bar{x} = 3.21$, $SD = 0.35$). The mean value ($\bar{x} = 3.31$, $SD = 0.39$) of the assessment of learning strategies demonstrated that the teacher trainers utilized learning strategies to improve teaching competencies.

Table 5. 3 Descriptive Statistics on Perception on Lifelong Learning, Lifelong Learning Competencies, and Learning Strategies

Instruments	$\bar{x}$	SD	Min	Max
perception on lifelong learning	3.35	0.40	2.33	4
lifelong learning competencies (LLLC)	3.21	0.35	2.33	4
learning strategies	3.31	0.39	2.62	4

The mean and standard deviation values for each dimension of the lifelong learning competencies of teacher trainers are illustrated in Table 5.3. A high perceived level of competence was generally achieved by teacher trainers in each of the lifelong learning competencies. Specifically, they possess the highest perceived level of competence in learning to learn ($\bar{x} = 3.27$, $SD = 0.44$), but they have the lowest perceived level of competence in mathematics and science ($\bar{x} = 3.14$, $SD = 0.41$).

Table 5. 2 Descriptive Statistics on Lifelong Learning Competencies of Teacher Trainers

LLLC	$\bar{x}$	SD
Literacy competence (LiC)	3.19	0.40
Multilingual competence (MuC)	3.18	0.45
Mathematical and Science competence (MSC)	3.14	0.41
Digital competence (DiC)	3.25	0.45
Learning to learn competence (LLC)	3.27	0.44
Citizenship competence (CiC)	3.21	0.41
Entrepreneurship competence (EnC)	3.22	0.42

Cultural awareness and expression competence (CuC)		3.22	0.44

Comparison of the Three Variables According to Background Factors

To verify whether or not a difference exists among the research variables in terms of background factors, we used the independent sample *t*-test to compare the scores according to gender and the region of the education degree college and employed ANOVA for age, level of education, and teaching tenure.

Gender

To establish the importance of gender in lifelong learning, we first examined the mean scores of the three variables (Table 5.4). The perception on lifelong learning by male teacher trainers seemingly exhibited more positive opinions about lifelong learning than those of female teacher trainers. The male teacher trainers obtained high scores in lifelong learning competencies and were more likely to achieve better scores on learning strategies compared with the female teacher trainers. Despite the higher mean scores of the men, the independent *t*-test did not exhibit statistically significant differences in the three variables (perceptions on lifelong learning: $t(47.38) = -0.60$, $p = 0.55$; lifelong learning competencies: $t(47) = -0.43$, $p = 0.67$; learning strategies: $t(46.26) = -0.99$, $p = 0.33$).

Table 5. 3 Descriptive Statistics of the Research Variables According to Gender

Instruments	Gender	N	x̄	SD
perception on lifelong learning	Male	38	3.39	0.42
	Female	262	3.34	0.40
lifelong learning competencies	Male	38	3.23	0.37
	Female	262	3.20	0.34
learning strategies	Male	38	3.38	0.41
	Female	262	3.30	0.38

The results of the analysis conducted to determine how the teacher trainers' each competence of lifelong learning competencies differ by gender are presented in Table 5.5. According to the mean scores, both male and female teacher trainers reached the same perceived level of literacy competence and multilingual competence. The mean scores of male teacher trainers are higher for competences in digital, learning to learn, citizenship and cultural awareness. On the other hand, the mean scores of female teacher trainers are higher for competences in science and mathematics and entrepreneurship. The independent t test,

however, showed that the differences are not statistically significant for all dimensions of lifelong learning competencies (p> 0.05).

Table 5. 4 Means, Standard Deviations, and Independent t Test in Lifelong Learning Competencies According to Gender

LLLCS	Gender	N	x̄	SD	t (df)	p
Literacy competence (LiC)	Male	38	3.19	0.39	0.01	0.990
	Female	262	3.19	0.40	(49.21)	
Multilingual competence (MuC)	Male	38	3.18	0.40	0.12	0.902
	Female	262	3.18	0.45	(52.41)	
Mathematical and Science competence	Male	38	3.13	0.38	0.14	0.887
	Female	262	3.14	0.41	(50.02)	
Digital competence (DiC)	Male	38	3.35	0.48	1.42	0.162
	Female	262	3.23	0.45	(46.93)	
Learning to learn competence (LLC)	Male	38	3.32	0.44	0.81	0.419
	Female	262	3.26	0.44	(48.41)	
Citizenship competence (CiC)	Male	38	3.25	0.41	0.56	0.579
	Female	262	3.21	0.41	(48.34)	
Entrepreneurship competence (EnC)	Male	38	3.20	0.47	0.21	0.833
	Female	262	3.22	0.42	(45.97)	
Cultural awareness and expression competence (CuC)	Male	38	3.27	0.52	0.62	0.541
	Female	262	3.22	0.43	(44.65)	

Age

Table 5.6 indicated that teacher trainers aged 41–50 years obtained the highest means for the three variables. Teacher trainers aged 31 to 40 years also obtained the highest mean scores for lifelong learning competencies. The result of one-way ANOVA demonstrated a significant difference in perception on lifelong learning by age (F (296) = 3.38, $p < 0.05$; Fig. 5.1). Dunnett's test illustrated that the mean scores of teacher trainers aged of 41–50 years are statistically significantly higher than those aged 20–30 years for perception on lifelong learning ($p > 0.01$), but no statistically significant differences were noted for the other age groups ($p > 0.05$). Moreover, although the study found no statistically significant difference between lifelong learning competencies by age (F (296) = 2.44, $p = 0.06$), the learning strategies they used differed (F (296) = 2.90, $p < 0.05$). The results of ANOVA indicated a statistical significance between age groups for learning strategies; the p values of Dunnett's test

highlighted that no statistical significance exists. The reason for this result is that the level of statistical significance in ANOVA for learning strategies was nearly 0.05 ($p = 0.035$).

Table 5. 5 Descriptive Statistics of Research Variables According to Age

Instruments	Age	N	x̄	SD
perception on lifelong learning	20-30 years	40	3.21	0.38
	31-40 years	80	3.37	0.38
	41-50 years	49	3.47	0.44
	Over 50 years	131	3.33	0.40
lifelong learning competencies	20-30 years	40	3.13	0.26
	31-40 years	80	3.26	0.38
	41-50 years	49	3.26	0.38
	Over 50 years	131	3.17	0.36
learning strategies	20-30 years	40	3.24	0.30
	31-40 years	70	3.38	0.39
	41-50 years	49	3.40	0.45
	Over 50 years	131	3.246	0.38
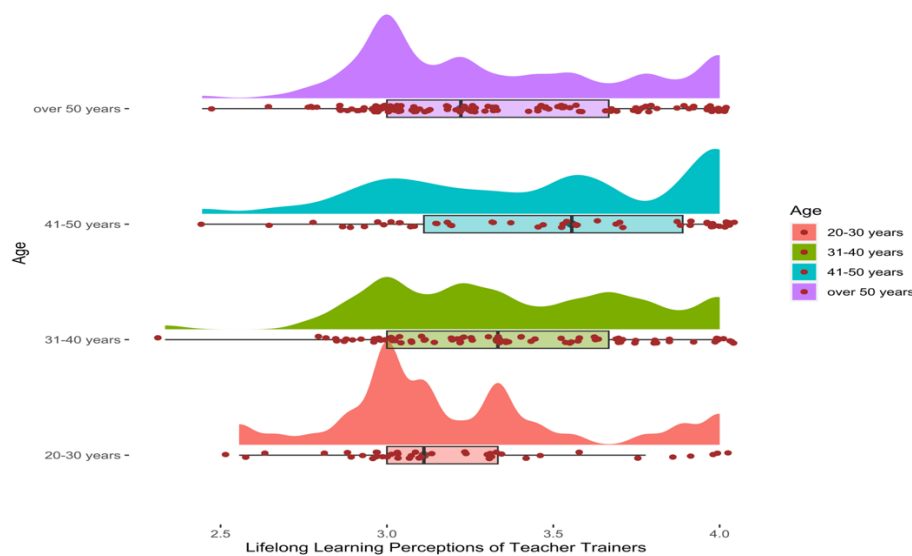
Figure 5. 1 Results of ANOVA on the Perceptions of Lifelong Learning by Age

Table 5.7 presented each competence of lifelong learning competencies in terms of ages of teacher trainers. Teacher trainers aged 41-50 years perceived the highest literacy competence levels, while those aged 20-30 years have the lowest scores. ANOVA test for literacy competence also revealed that there is a statistically significant difference in literacy competence according to their ages, ($p < 0.05$). The Dunnett's test identify that 41-50 years old teacher trainers have statistically higher perceived level in literacy competence than 20-30

years ages, (p<0.05). Teacher trainers between the ages of 31 and 40 have the highest scores in both multilingual competence and mathematical and science competence. Based on the results of the ANOVA test, there is no significant difference between them (p > 0.05). The highest perceived level of digital competence was achieved by teacher trainers 41-50 years old while the lowest perceived level was achieved by teacher trainers 20-30 years old. The Dunnett's test also revealed that teacher trainers between the two groups ages (31- 40 years old and 41-50 years old) have statistically higher perceived level in digital competence than 20-30 years ages, (p<0.05). The teacher trainers between the ages of 31 and 40 performed at the highest perceived level in terms of learning to learn, citizenship, and entrepreneurship competencies, while the group between the ages of 20 and 30 performed at the lowest level. There is significant difference in only citizenship competence (p<0.05). *Post hoc comparisons using the Dunnett's test* also indicated that the mean scores for 20- 30 years old teacher trainers were significantly lower than those who aged 31-40 years (p<0.01) and those between the ages of 41-50 (p<0.05). The highest perceived level of cultural awareness competency was found in teacher trainers between the ages of 41 and 50, while the lowest perceived level was seen in those between 20 and 30. Based on the ANOVA results, their difference does not meet statistical significance.

Table 5. 6 Means, Standard Deviations, and One-Way Analyses of Variance in Lifelong Learning Competencies According to Age

LLLC	Age	N	x̄	SD	F (296)	p
LiC	20-30 years	40	3.12	0.42		
	31-40 years	80	3.17	0.33	2.767	0.042 *
	41-50 years	49	3.33	0.47		
	Over 50 years	131	3.18	0.40		
MuC	20-30 years	40	3.15	0.33		
	31-40 years	80	3.27	0.42	2.327	0.075
	41-50 years	49	3.22	0.45		
	Over 50 years	131	3.11	0.49		
MSC	20-30 years	40	3.10	0.30		
	31-40 years	70	3.20	0.37	1.02	0.386
	41-50 years	49	3.17	0.45		
	Over 50 years	131	3.11	0.44		
DiC	20-30 years	40	3.12	0.38		
	31-40 years	70	3.34	0.46	3.47	0.017*
	41-50 years	49	3.35	0.54		
	Over 50 years	131	3.20	0.42		
LLC	20-30 years	40	3.22	0.41		
	31-40 years	70	3.35	0.46	1.4	0.243
	41-50 years	49	3.27	0.50		
	Over 50 years	131	3.23	0.42		
CiC	20-30 years	40	3.05	0.32		
	31-40 years	70	3.29	0.43	3.63	0.013 *
	41-50 years	49	3.27	0.48		
	Over 50 years	131	3.19	0.38		
EnC	20-30 years	40	3.15	0.40		
	31-40 years	70	3.30	0.42	1.93	0.124
	41-50 years	49	3.24	0.43		
	Over 50 years	131	3.18	0.43		
CuC	20-30 years	40	3.12	0.34		
	31-40 years	70	3.25	0.47	2.04	0.109
	41-50 years	49	3.34	0.49		
	Over 50 years	131	3.20	0.43		

Region of Education Degree College

Tables 5.8 presents the results of the analysis on the differences among the three variables according to the region of the education degree colleges. The study found that teacher trainers from upper region of Myanmar obtained higher mean scores than those from the lower regions for the three variables. Moreover, the study found statistical significance among the three variables in terms of region (Table 5.8; perception of lifelong learning: $p < .05$, Fig. 5.2; lifelong learning competencies: $p < .001$, Fig. 5.3; and learning strategies: $p < .001$, Fig. 5.4).

Table 5. 7 Descriptive Statistics of the Research Variables According to the Region of the Education Degree College

Instruments	Region	N	x̄	SD	t(df)	p
perception on lifelong learning	Lower	135	3.29	0.36	-2.37(297.88)	0.019*
	Upper	165	3.40	0.43		
lifelong learning competencies	Lower	135	3.12	0.29	-3.75(297.34)	0.000***
	Upper	165	3.27	0.38		
learning strategies	Lower	135	3.21	0.33	-4.43(297.94)	0.000***
	Upper	165	3.40	0.41		
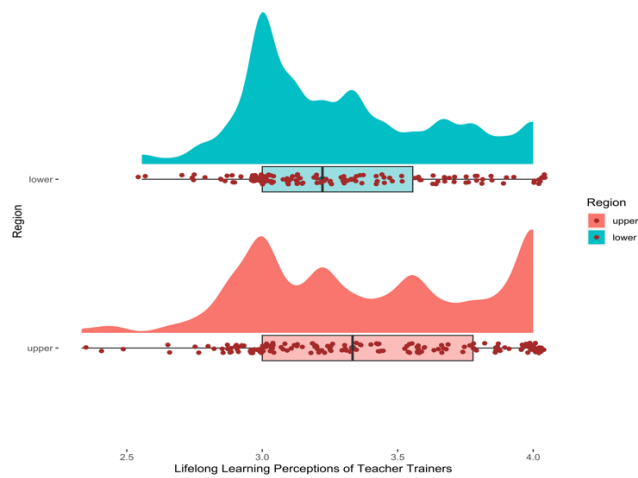
Figure 5. 2 Result of ANOVA on the Perception of Lifelong Learning by Region of the Education Degree College
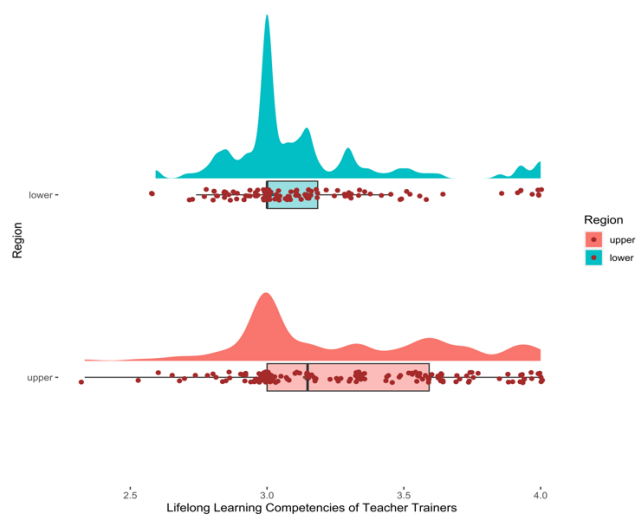
Figure 5. 3 Result of t-Test on Lifelong Learning Competencies by Region of the Education Degree College

Table 5.9 shows that teacher trainers working in education degree colleges situated in the upper region of the country are more proficient in all aspects of lifelong learning

competencies than those from the lower region. Independent t test also showed that there are significant differences in multilingual competence ($p<0.01$) and other competences of lifelong learning ($p<0.001$), with the exception of literacy competence and mathematical and science competence($p>0.05$).

Table 5. 8 Means, Standard Deviations, and Independent *t* Test in According to Region of the Education Degree College

LLLCS	Region	N	x̄	SD	*t* (df)	p
LiC	Upper	165	3.23	0.44	-1.7956 (297.18)	0.073
	Lower	135	3.15	0.34		
MuC	Upper	165	3.24	0.48	-2.7278 (297.91)	0.006**
	Lower	135	3.10	0.40		
MSC	Upper	165	3.18	0.44	-1.78 (297.84)	0.076
	Lower	135	3.10	0.35		
DiC	Upper	165	3.33	0.51	-3.4988 (289.72)	0.000***
	Lower	135	3.15	0.35		
LLC	Upper	165	3.37	0.48	-4.4798 (295.79)	0.000***
	Lower	135	3.15	0.36		
CiC	Upper	165	3.28	0.45	-3.4425 (293.43)	0.000***
	Lower	135	3.13	0.33		
EnC	Upper	165	3.30	0.45	-3.78 (297.95)	0.000***
	Lower	135	3.12	0.37		
CuC	Upper	165	3.31	0.49	3.8802 (292.19)	0.000***
	Lower	135	3.12	0.35		
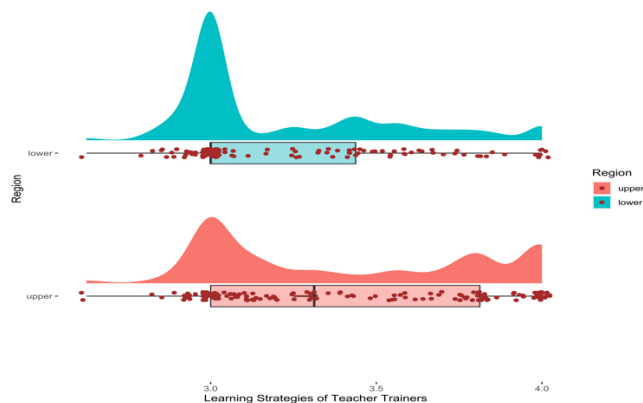
Figure 5. 4 Result of t-Test on Perception of Learning Strategies by Region of the Education Degree College

Level of Education

Table 5.10 presents the result of the descriptive analysis. The study found that teacher trainers with bachelor degrees are most likely to positively perceive lifelong learning and scored the highest on the LLLCS. In contrast, teacher trainers with PhDs obtained the highest

mean scores for learning strategies. However, inferential analysis (ANOVA) did not point to significant differences among the three variables (perception of lifelong learning: $F(296) = 1.34$, $p = 0.26$; lifelong learning competencies: $F(296) = 0.49$, $p = 0.69$; learning strategies: $F(296) = 1.07$, $p = 0.36$) according to level of education.

Table 5. 9 Descriptive Statistics of the Research Variables by Level of Education

Instruments	Education level	N	x̄	SD
perception on lifelong learning	Bachelor	91	3.39	0.42
	Master	196	3.34	0.40
	Phd	13	3.23	0.32
lifelong learning competencies	Bachelor	91	3.23	0.38
	Master	196	3.21	0.34
	Phd	13	3.12	0.28
learning strategies	Bachelor	91	3.29	0.41
	Master	196	3.27	0.37
	Phd	13	3.34	0.38

In Table 5.11, teacher trainers were ranked in terms of their education level in each lifelong learning competence. The highest levels of all lifelong learning competence were achieved by teacher trainers who had bachelor's degrees, and the highest levels of entrepreneurship competence were achieved by teacher trainers who had master's degrees. However, ANOVA test showed that there are no significant differences in each dimension of lifelong learning competencies according to their education level ($p>0.05$).

Table 5. 10 Means, Standard Deviations, and One-Way Analyses of Variance in Lifelong Learning Competencies According to Education level

LLLCS	Education level	N	x̄	SD	F (296)	p
LiC	Bachelor	91	3.22	0.47		
	Master	196	3.19	0.36	1.764	0.173
	Phd	13	3.00	0.19		
MuC	Bachelor	91	3.22	0.44		
	Master	196	3.17	0.46	1.223	0.296
	Phd	13	3.03	0.35		
MSC	Bachelor	91	3.15	0.42		
	Master	196	3.14	0.41	0.111	0.895
	Phd	13	3.09	0.32		
DiC	Bachelor	91	3.27	0.50		
	Master	196	3.24	0.44	0.248	0.781
	Phd	13	3.21	0.37		
LLC	Bachelor	91	3.27	0.47		
	Master	196	3.28	0.44	0.698	0.498
	Phd	13	3.13	0.35		
CiC	Bachelor	91	3.22	0.41	0.01	0.99

	Master	196	3.21	0.41		
	Phd	13	3.21	0.37		
	Bachelor	91	3.20	0.46		
EnC	Master	196	3.23	0.41	0.143	0.867
	Phd	13	3.21	0.42		
	Bachelor	91	3.26	0.46		
CuC	Master	196	3.21	0.43	0.739	0.478
	Phd	13	3.13	0.44		

Teaching Tenure

Teacher trainers with a tenure of 1–5 years obtained the highest mean scores for the three variables (Table 5.12). Consequently, the study compared their difference via ANOVA. The results indicated that no statistical difference exists across years of experience (perception on lifelong learning: $F(296) = 1.97$, $p = 0.12$; lifelong learning competencies: $F(296) = 2.06$, $p = 0.11$; learning strategies: $F(296) = 2.34$, $p = 0.07$).

Table 5.11 Descriptive Statistics of the Research Variables According to Teaching Tenure

Instruments	Teaching Service	N	$\bar{x}$	SD
perception on lifelong learning	1-5 years	100	3.42	0.41
	6-10 years	43	3.36	0.41
	11-15 years	41	3.34	0.41
	Over 15 years	116	3.29	0.38
lifelong learning competencies	1-5 years	100	3.26	0.33
	6-10 years	43	3.25	0.41
	11-15 years	41	3.22	0.38
	Over 15 years	116	3.15	0.32
learning strategies	1-5 years	100	3.33	0.42
	6-10 years	43	3.29	0.38
	11-15 years	41	3.30	0.36
	Over 15 years	116	3.23	0.35

Table 5.13 presents the levels of each competence in lifelong learning reached by the teacher trainers according to their teaching tenure. In terms of literacy competence, teacher trainers between the teaching tenures of 6 and 10 achieved best, while those beyond 15 years teaching tenures scored lowest. Teacher trainers with 11 to 15-year teaching tenures performed best in multilingual competence and mathematical and scientific competence. In both of these competencies, teacher trainers with over 15 years of experience scored lowest. In terms of digital competence, teacher trainers between the teaching tenures of 6 and 10 scored the highest, while those between the teaching tenures of 11 and 15 and those above 15 scored lowest. In learning to learn, citizenship, entrepreneurship and cultural awareness competencies, 1-5 years experienced teacher trainers gained the highest scores. Over 15 years of teaching

experience resulted in the lowest levels of competencies in learning to learn, entrepreneurship, and cultural awareness, while 11 to 15 years of teaching experience resulted in the lowest scores in citizenship competence. However, all lifelong learning competencies were not significantly different (p>0.05), with the exception of digital competence (p<0.05), based on the results of ANOVA results. The Dunnett's test also observes that there are statistically significant differences between the teacher trainers who have 6-10 years teaching tenures and those with over 15 years teaching tenures in terms of digital competence (p<0.05).

Table 5. 12 Means, Standard Deviations, and One-Way Analyses of Variance in Lifelong Learning Competencies According to Teaching Tenure

LLLCS	Teaching Service	N	x̄	SD	F (296)	p
LiC	1-5 years	100	3.24	0.39	2.473	0.062
	6-10 years	43	3.27	0.42		
	11-15 years	41	3.20	0.48		
	Over 15 years	116	3.12	0.39		
MuC	1-5 years	100	3.20	0.45	2.071	0.104
	6-10 years	43	3.23	0.50		
	11-15 years	41	3.27	0.42		
	Over 15 years	116	3.10	0.43		
MSC	1-5 years	100	3.17	0.37	1.141	0.333
	6-10 years	43	3.17	0.46		
	11-15 years	41	3.19	0.45		
	Over 15 years	116	3.09	0.40		
DiC	1-5 years	100	3.30	0.46	3.016	0.030 *
	6-10 years	43	3.38	0.45		
	11-15 years	41	3.18	0.55		
	Over 15 years	116	3.18	0.39		
LLC	1-5 years	100	3.34	0.46	1.563	0.198
	6-10 years	43	3.29	0.47		
	11-15 years	41	3.24	0.50		
	Over 15 years	116	3.21	0.39		
CiC	1-5 years	100	3.27	0.41	1.133	0.336
	6-10 years	43	3.22	0.46		
	11-15 years	41	3.16	0.48		
	Over 15 years	116	3.18	0.36		
EnC	1-5 years	100	3.26	0.41	0.997	0.395
	6-10 years	43	3.22	0.49		
	11-15 years	41	3.24	0.45		
	Over 15 years	116	3.17	0.42		
CuC	1-5 years	100	3.29	0.46	1.867	0.135
	6-10 years	43	3.26	0.47		
	11-15 years	41	3.24	0.47		
	Over 15 years	116	3.15	0.40		

Association among the Three Variables

The study used Pearson's correlation analysis to identify the degrees of association among perception on lifelong learning, lifelong learning competencies, and learning strategies. The study found a highly significant correlation between perception of lifelong learning and lifelong learning competencies (*r=.64, p < .001*, Fig. 5.5). Accordingly, the study noted

increases in the levels of perception on lifelong learning as well as the scores for the LLLCS. In addition, perception on lifelong learning is also highly related to learning strategies ($r=.55$, $p < .001$, Fig. 5.5). Based on perception of lifelong learning, the learning strategies of the teacher trainers are likely to differ. Furthermore, the study observed a significantly favorable relationship between lifelong learning competencies and learning strategies ($r=.77$, $p < .001$, Fig. 5.5). In other words, learning strategies may influence the cultivation of lifelong learning competencies.
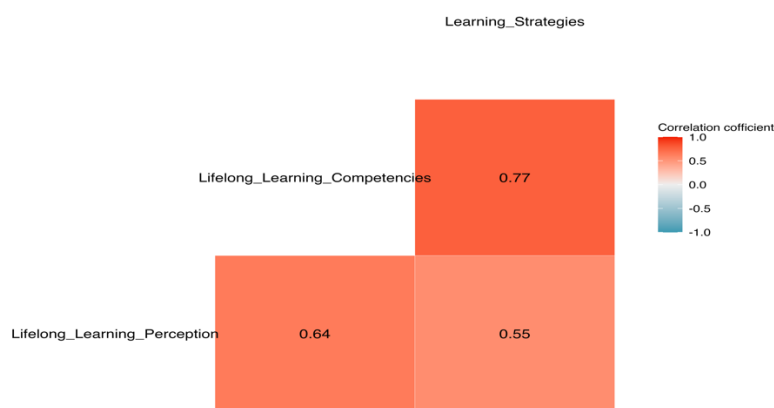
Figure 5. 5 Correlation Among The Research Variables

5.2.7. Discussion, limitation, and future direction

In line with the descriptive statistics, the study addresses RQ1 by demonstrating that teacher trainers are highly aware of the importance of lifelong learning and exhibit high levels of lifelong learning competencies. They also employ learning strategies to promote lifelong learning. This possibility is related to the context in which teacher trainers in education degree colleges in Myanmar were encouraged to improve professional competence by participating in training initiatives such as the English for Education College Trainers, projects Towards Results in Education and English, and new curriculum trainings and workshops, although no lifelong learning activities were noted.

The solution for RQ 2 is that teacher trainers typically attained a high degree of competency in each of the lifelong learning competencies. The teacher trainers, in particular, have the highest degree of competency in learning how to learn but the lowest level in math and science. This means that they are aware of their preferred learning styles to develop the required competencies, possess the capacity to organize and persevere with one's learning, to

learn and work both cooperatively and independently. They can also use prior knowledge, life experience, and curiosity to search for learning and growth opportunities in a range of life circumstances. On the other hand, due to language difficulties, teacher educators may have trouble understanding mathematics and science. Many individuals in Myanmar do not speak English as their first language, making it challenging for them to acquire the technical terms used in math and science without a solid basis in the language. It is evident that multilingual competence is the second lowest score obtained by teacher trainers. Cultural, societal and may other background factors may also play a role in the lower level of science and math competence among teacher trainers.

Consequently, the findings for RQ3 and 4 are interesting, in which the study compared the three variables and each competency of lifelong learning competencies on the basis on their background factors. Notably, previous studies overlook background factors in relation to perception on lifelong learning and learning strategies. Therefore, the current study discusses the findings on these two variables with a consideration of background factors without comparing them to those of previous studies.

One of the findings illustrated that the three variables did not significantly different according to gender. In other words, gender is not vital in relation to three variables. This finding is consistent with those of earlier studies (Aykaç et al., 2020; BÜLBÜL, 2020; Sahin et al., 2010; Yap & Tan, 2022). Nevertheless, conflicting findings from other studies remain (Pilli et al., 2017; Sen & Durak, 2022; Shin & Jun, 2019) in which gender is described as a significant factor. Gender cannot affect each competency of the lifelong learning competencies as well. The following are some possible explanations for the lack of differences in lifelong learning competencies among teacher trainers in Myanmar based on gender. A variety of factors, including equal access to education and training and similar professional experiences, could explain the lack of gender differences in lifelong learning competencies of Myanmar teacher trainers. Researchers in Myanmar may not have carried out enough research on this topic to identify meaningful differences between female and male teacher trainers in regards to lifelong learning competencies. International studies, however, had both contrasting and similar findings. There are significant differences in multilingual competence, mathematical and science competence and digital competence (Sahin et al., 2010) and literacy competence and learning to learn competence (Adabaş & Kaygin, 2016) according to the gender. Şentürk & Baş (2021) found no differences in entrepreneurship competence by gender.

The next finding is that no differences existed in terms of level of education and teaching tenure in relation to the three variables. Previous studies (Aykaç et al., 2020; Sen & Durak, 2022; Yap & Tan, 2022), except for Ayanoglu and Guler (2021), state that educational qualification does not influence lifelong learning competencies. Thus, a possibility exists that teacher trainers with varying levels of education and teaching tenure could gain the same scores on the LLLCS for a few reasons. A scale that focuses on general lifelong learning competencies, such as literacy, multilingual, and digital competencies, may only partially capture the specific knowledge and skills that may be acquired by teacher trainers in a particular field with PhDs or longer teaching tenure. Thus, teacher trainers with PhDs or longer teaching tenure may possess theoretical knowledge and understanding about lifelong learning competencies but lack the opportunity to apply them in the professional setting. In addition, the findings of other studies (Aykaç et al., 2020; BÜLBÜL, 2020; Sen & Durak, 2022) are similar to the current result in which teaching tenure does not influence lifelong learning competencies. However, a few previous studies (Bozat et al., 2014; Kuzu et al., 2015; Yildiz-Durak et al., 2020) reveal that lifelong learning competencies may differ according to teaching tenure.

Their differences in each dimension of lifelong learning competencies are not also statistically obvious in terms of education level. It is supposed that the degree the teacher trainers possess are not vital in developing the lifelong learning competencies. Therefore, ultimately, it is up to each individual teacher trainer to prioritize their own learning and development and to continuously seek opportunities for growth and improvement in lifelong learning competencies, regardless of their obtained degree.

Except for citizenship competence, teacher trainers with over 15 years' experience in teaching have the lowest scores in seven lifelong learning competencies. On the other hand, only digital competence can statistically differ while other seven lifelong learning competencies were not significantly different according to their teaching services. It can affect digital competence, but not the whole lifelong learning competencies variable. The technological environment is always growing, and teacher trainers with 6-10 years teaching services may be more accustomed to emerging technologies than those with more expertise who have over 15 years teaching service. While they may have had less exposure to such technology throughout their early years, younger teacher trainers may be more accustomed to using digital technologies in their profession. Age-based results can also double-check it. In

Myanmar, 30-40 year old teachers who gained higher levels of perceived digital competence have taught in Education Degree Colleges for 6-10 years.

In light of the outcomes of the current study, differences may exist among the three variables and each competency of lifelong learning competencies in terms of age and region of the education degree colleges. In addition, teacher trainers aged 41–50 years have obtained a better perception of lifelong learning, high perceived levels of competencies, and learning strategies compared with the other age groups. Teacher trainers aged 20–30 years also possess the same level of lifelong learning competencies as those who are older. However, they are not statistically significant. This finding is in agreement with those of other related studies (Ayanoglu & Guler, 2021; Sen & Durak, 2022). It is important to note that age does exert a significant influence on each lifelong learning competency, even though it may not exert the same amount of influence on developing lifelong learning competencies. Based on the ANOVA and the post-host tests, there are different perceived levels in the literacy competence, digital competence and citizenship competence among the age groups. It could be explained that 41-50 years old teacher trainers may have more experience using their mother tongue in various contexts, including in their daily lives, in education and professional training. Besides, they may be more driven to learn and use new digital since they may have witnessed more advances in technology over the course of their lifetime and are aware of its potential advantages. Teacher trainers who are 20-30year old perceived lower citizenship competence compared to 31-40 years old group and 41- 50 years old group. This result could be caused by a number of factors. Teacher trainers who are 31-40 years old may have had more opportunities to interact with people from different generations; older and younger individuals. They may have grown up during a time of greater social and political awareness in Myanmar, and may have been exposed to a wider range of citizenship-related issues. This exposure could contribute to a more nuanced understanding of citizenship.

In particular, teacher trainers from the education degree colleges located in the upper regions of Myanmar exhibit high levels of awareness of lifelong learning and lifelong learning competencies and apply appropriate learning strategies better than those from the lower regions. Yildiz-Durak et al. (2020) suggest that the size of the classroom, number of students, number of teachers, and atmosphere of schools will likely influence the ability of teachers for lifelong learning. Education degree colleges throughout Myanmar have varying numbers of enrolled student teachers, which result in different classes. Moreover, the recruitment of teacher

trainers is unequal across departments. In terms of regions where Education degree colleges situated, our study found that there are significant differences in multilingual competence, digital competence, learning to learn competence, entrepreneurship competence, citizenship competence and cultural awareness competence. Teacher trainers from the Education Degree Colleges in the upper regions of Myanmar performed better than those in the lower regions in those competencies related to lifelong learning. It may also be influenced by various factors such as access to resources, funding, and cultural factors. Myanmar has a diverse cultural landscape, which may have fostered a greater awareness and appreciation for cultural diversity, and this could translate to a better cultural awareness competence. Meanwhile, there are no statistical differences between the regions in literacy competency or mathematical and science competency. It may be because teacher trainers from the both regions of Myanmar, have the same strengths and difficulties in those competencies. It is possible that teacher trainers' first languages are different due to Myanmar's diverse ethnicities. Since our questionnaire refers to Burmese as the official language, most teacher trainers may have the same difficulty level with Burmese. Moreover, there are not enough resources in Burmese and local languages for learning Mathematics and Science.

Our findings indicate that no competence in lifelong learning can differ based on background characteristics such as gender and education level. Multilingual competence, digital competence, learning to learn competence, citizenship competence, entrepreneurship competence, and cultural awareness competence can be different only by region of the education degree colleges, but literacy, mathematics, and science competence cannot differ. It is significant to highlight that there may be additional factors such as socio-economic level of region involved. It is also critical to keep in consideration that, regardless of gender and education level, individual differences in experience, exposure, and training can have a big impact on performance. Literacy competence, digital competence and citizenship competence can differ by the age while teaching service can influence only on the digital competence.

The study was able to address RQ5 in a meaningful manner due to the high performance of the teacher trainers for all variables. Previous studies demonstrated that lifelong learning competencies/tendencies/affinities are correlated with professional competencies and educational technology (Sen & Durak, 2022), self-regulatory learning (Nacaroglu et al., 2021), teaching beliefs (Şentürk & Baş, 2021), constructivist teaching–learning (Karataş et al., 2021), and reading motivation (Ayanoglu & Guler, 2021). The current study extends the findings of

previous studies by demonstrating that positive correlations also exist among the three variables.

5.2.8. Limitations and future direction

This study has its limitations. First, the outcomes were not discussed and compared well with participants from previous studies, because studies that examined lifelong learning competencies among teacher trainers were scarce. Second, we examined only the general background factors although it one comes from the several socio-economic factors. Evidently, a few of the current findings were inconsistent with those of previous studies. Specifically, researchers continue to debate whether or not region and age play a role in the development of lifelong learning competencies. Notably, these reasons discussed in Myanmar context are general. The choice of instruments may also influence the current findings. This aspect is a drawback not only of the current study but also of the research on lifelong learning. Third, it is worth noting that perceived level of lifelong learning competencies may not necessarily reflect actual competencies. Therefore, it is important to carefully consider other factors that may be influencing each competence of lifelong learning.

Thus, additional studies that use larger sample sizes are required to determine whether or not the background factors of teacher trainers exert an influence on the three variables and each competency of lifelong learning competencies. Additionally, further research would be needed to determine the other possible underlying factors contributing to the observed differences in perceived level of lifelong learning competencies between teacher trainers in Myanmar and international contexts. In the future, identifying the relationships among the factors of lifelong learning competencies (e.g., literacy and mathematical competencies) and the research variables perception on lifelong learning and learning strategies, could be beneficial for research. The current study also recommends an examination of one specific type of learning strategy, such as cooperative, collaborative learning, or self-directed learning, to determine lifelong learning competencies.

However, the results of the current study remain a necessary component of the research on lifelong learning in teacher education. In contrast to previous research, the study extends the findings from previous studies by demonstrating that lifelong learning competencies are associated with perception on lifelong learning and learning strategies. Furthermore, the study identified the role of background factors in the three research variables and each competency of lifelong learning. In other words, if the lifelong learning competencies of teacher trainers,

students, and other academic staff were implemented at educational institutions, then our results should be considered.

6. QUALITATIVE PHASE

INFLUENCING FACTORS ON LIFELONG LEARNING COMPETENCIES OF TEACHER TRAINERS

6.1. Introduction

Many of the literatures on lifelong learning deal with how educational institutions can be transformed to foster lifelong learning among teachers, educators, administrators, and students. Our previous systematic literature review on lifelong learning made us gain a deeper understanding of it. The research gaps identified led us to plan an investigation of the lifelong learning competencies of teacher trainers using a mixed method research design. Our previous empirical studies also examined the lifelong learning competencies of teacher trainers as well as some background factors. Our prior quantitative studies have some limitations, and the findings are still controversial in comparison with previous studies of others. This current study has therefore been conducted qualitatively to explain more about the factors that influence lifelong learning competencies. The purpose of this paper is to explore perceptions of lifelong learning competencies, as well as how the new learning community, teaching competencies, and learning strategies affect lifelong learning competencies of teacher trainers.

6.2. Literature Review

According to a systematic literature review, factors that can influence lifelong learning competencies could be identified qualitatively, quantitatively, or both. The faceted effects of both personal and institutional factors on lifelong learning competencies were identified by Shin & Jun (2019) using lifelong learning competencies measures. The lifelong learning skills survey was used by Deveci (2019a) to study inter-personal interaction in the classroom and as a major predictor of future and current lifelong learning engagement. Using the lifelong learning scale, Bath & Smith (2009a) discovered features and traits that might point to a person's propensity for lifelong learning. By using a questionnaire form on each individual's experience with lifelong learning and scores from two semesters for the development of lifelong learning competency, Grokholskyi et al. (2020a) determined the importance of psychological traits and metacognitions to the growth of lifelong learning competency. According to the background characteristics, each lifelong learning competency was quantitatively analyzed by Adabaş & Kaygin and Sahin et al.(2016; 2010). According to these studies, a variety of personal traits may have an impact on a person's capacity for lifelong learning.

Yen et al. (2019a) described personal learning environments can be used to promote never-ending learning. Buza et al. (2010) explained how education might be set up to guarantee high standards and lifelong learning. In their study, they found out that the teacher educators had a wide range of ideas about lifelong learning, focused on acquiring a variety of skills, recognized problems, had strategies for addressing, locating, and using information; and comprehended learning strategies to acquire and apply new knowledge. The mixed method study by Matsumoto-Royo et al. (2022) demonstrated that assessments can improve metacognition abilities and foster lifelong learning in teacher education. Lavrijsen & Nicaise (2017) highlighted the significance of extrinsic barriers to explain unfair involvement in lifelong learning by the use of data from the Program for the International Assessment of Adult Competencies. In their qualitaitve study, Zuhairi et al. (2020) discussed the challenges in enhancing lifelong learning in open universities and suggested integrate online instructional design and strategies as well as policies and strategies for leavers, student portfolios, and services and support for students with special needs. Deveci (2022) also discovered the consequences of Covid-19 on lifelong learning skills. A study on lifelong learners' learning strategies was conducted by Muller & Beiten (2013), applying the learning styles instrument and coping strategies scale. Nacaroglu et al., (2021) found out that those who believe they have strong self-regulatory learning capacity are more likely to pursue lifelong learning. These research recommended that we consider extraneous influences such as the learning community after the pandemic, and learning strategies. According to Şentürk & Baş (2021) and Selvi (2010), teacher competencies are also related with the lifelong learning competencies. In light of this, we also take into account any potential effects that teaching competences may have on lifelong learning competencies.

The findings of our previous studies showed that teacher trainers exhibit high perceived levels of lifelong learning competencies which are related with the perception on lifelong learning and learning strategies. Their perceptions on lifelong learning competencies are influenced by the age and region of the education degree colleges. Our findings are debating with other studies which observed that gender (Pilli et al., 2017; Sen & Durak, 2022; Shin & Jun, 2019), education level Ayanoglu and Guler (2021) and teaching service (Bozat et al., 2014; Kuzu et al., 2015; Yildiz-Durak et al., 2020) can affect lifelong learning competencies. In addition, we also examined each competence of lifelong learning based on the background factors of teacher trainers as our lifelong learning competencies scale (LLLCS) has eight main competencies for lifelong learning. According to its findings, teacher trainers obtained the

highest level of perceived competency in learning how to learn, but the lowest in math and science. The level of education and gender do not matter for all lifelong learning competencies. Region of the Education degree college where they are performing, has an impact on multilingual competence, digital competence, learning to learn competence, citizenship competence, entrepreneurship competence, and cultural awareness competence. Additionally, age plays a critical role in literacy, digital competence, and citizenship competence, but only digital competence is affected by teaching service. There might be additional factors such as socio-economic status, individual differences, exposure, and training which we have not discovered. It is also interesting to explore one specific type of learning strategy, like cooperative, collaborative, or self-directed learning, to improve their teaching competencies which might be related with the lifelong learning competencies of teacher trainers. All these previous studies guided us to explore the influencing factors on lifelong learning competencies of teacher trainers based on their background factors, learning community, their teaching competencies and learning strategies.

Beyond to the previously stated elements, Deveci's study (2022) reminded us to take into account the effect of the pandemic. The learning community for the professionals is clearly defined and discussed by various researchers (Buysse et al., 2003; Hord, 2004; Thompson et al., 2004; Xiao & Saedah, 2015). It is certain that when the world is faced with the coronavirus illness pandemic in 2019, the rate of substantial change accelerates. That can be entirely different from what professionals have learned and experienced through involvement in learning communities. As a result, the learning community's design appears to be novel and distinctive. Professionals are inclined to participate in a new learning community, especially those from educational institutions. There has no definition of new learning community yet at the time of writing. It becomes necessary to write the operational definition of new learning community for our study. During the pandemic, although all schools are about to close, teachers and students does not cease learning process. Teachers have to work from home, teach and learn online. The silver lining is that teachers have the access to attend online training provided by local and global learning centers. Trainers and instructors will hopefully have a dramatically different role in the new learning community. Therefore, the operational definition of a new learning community is a place where teachers can teach and learn online, acquire both technological and pedagogical skills and share new experiences with others from different options such as schools, courses and trainings.

Thus, the current study is conducted to solve the limitations of our previous studies, exploring more possible factors that can influence on lifelong learning competencies of teacher trainers. The guided research questions are:

1. How do the teacher trainers understand lifelong learning and lifelong learning competencies?

2. What are the factors that promote or hinder the lifelong learning competencies of teacher trainers?

3. How can their learning community influence lifelong learning competencies of teacher trainers?

4. Which learning strategies do the teacher trainers use to improve the teaching competencies?

5. How can their teaching competencies relate with lifelong learning competencies?

6.3. Methodology
6.3.1. Research Design and Data Collection Procedure

As indicated earlier, our main study used an explanatory sequential mixed methods design. The present study is the quantitative part of our main study to supplement or further explain the quantitative results (Creswell, 2012). In other words, the objective of this method is to better understand the critical factors of the lifelong learning competencies of teacher trainers. The qualitative instrument was created using the quantitative study's variables and its findings. Semi-structured interviews were performed remotely using the messaging apps viber and messenger, with audio captured using a recorder. The interview questions were initially written in English so that they could be checked and revised by both authors. The first author, a native of Burma, then translated them into Burmese. Two PhD candidates who were formerly teacher trainers in Myanmar aided this effort through reviewing the translated version. They offered feedback on the questions' content, clarity, and understanding. Following that, certain modifications were done in accordance with their recommendations. Prior to starting the interview, ethical approval was given by the Institutional Review Board (IRB) of the Doctoral School of Education, University of Szeged.

This study adhered to the interview topic guides' methods, questions, and note-taking areas in order to conduct the interviews (Creswell, 2012). One-on-one interviews are conducted so that participants may talk freely, and can share ideas without feeling

uncomfortable. Verbal informed permission was obtained and recorded before to the interview. The transcripts were reviewed by the Burmese author who performed the interviews, and any gaps were filled in.

6.3.2. Participants

The formal study is conducted with 12 interviewees who are performing at the Education Degree Colleges in Myanmar. They were selected through a purposive sampling strategy balanced on their background factors, including age and region. However, only male teacher trainer was willing to participate in this interview. The interviewees' profiles are presented in Table 6.1.

Table 6. 1 Profiles of the interviewees

Background factors		frequency	%
Gender	male	1	8.33%
	female	11	91.67 %
Age	20-30 years	6	50.00%
	31-40 years	5	41.67%
	41-50 years	1	8.33%
Region	Lower	3	25.00%
	Upper	9	75.00%
Education level	Bachelor	1	8.33%
	Master	3	25.00%
	Phd (still studying)	8	66.67%
Teaching Service	1-5 years	5	41.67%
	6-10 years	6	50.00%
	11-15 years	1	8.33%
Total		12	100%

6.3.3. Instrument

In order to answer the research questions using qualitative data was a series of semi-structured interviews. Structured and unstructured interview components combine to form the semi-structured interview. It is conducted using a predetermined order of questions that serve as a guide, but additional questions may be included to encourage deeper investigation of issues raised by the interviewee (Cachia & Millward, 2011).

Based on our previous quantitative studies (Thwe & Kálmán, 2023a, 2023b), the main interview questions, contain fifteen questions covering the perceptions on lifelong learning and lifelong learning competencies, factors influencing on lifelong learning competencies, new learning environment and learning strategies. Additionally, each participant had the opportunity to elaborate on any responses or make any additional points they deemed relevant to the discussion at the end of the interview. The interview protocol are as follows.

Perceptions on lifelong learning and lifelong learning competencies phase

iv.   How do you understand Lifelong learning?

v.   How can you tell someone is practicing lifelong learning?

vi.   According to the European Commission, there are eight key competencies for lifelong learning: competence in literacy, multilingual, mathematical and science, digital, learning to learn, citizenship, entrepreneurship and cultural awareness. Among them, which are your highest and lowest competencies? Why do you think so?

Factors influencing on each competency phase

iv.   Based on his/her answers, how do you think these highest and lowest competencies are related with your background factors?

v.   Which any other factors can have the impact on improving each of them?

vi.   Which factors can hinder them?

New learning community phase

iv.   After Covid 19, how is your learning environment?

v.   Which areas are mostly changed and remain the same?

vi.   How do you think that these changes and/or non-changes can affect any competence of lifelong learning competencies?

Learning Strategies phase

iv.   Which learning strategies do you use to improve your teaching competencies?

v.   Which one do you prefer to use?

vi.   By improving them, how can you improve your lifelong learning competencies be also developed? Which competence?

6.3.4. Data Analysis

The interview questions were piloted with assistance from the aforementioned PhD students who would not take part in the study, in order to ensure its validity. With their consent, I took notes on their performances while they pretended to be being interrogated. Before the formal interview started, a few small wording adjustments were done for Burmese translation.

We used the six interconnected processes of qualitative data analysis to understand the recording data from the formal interviews (Creswell,2022). We started by transcribing the data and determining whether hand analysis would be appropriate. Prior to the coding of the

qualitative interview data, the interviewees were each assigned a code such as TT1, TT 2 or TT3, etc. to conceal their identity. Our next step was to carefully read each statement of the transcribed data several times for more than thirty days in order to better understand their responses.

We also used the inductive approach to code the text data, which entails drawing meanings and developing themes from the data devoid of any prior assumptions. This technique helps us using mixed methods to compare our current qualitative and previous quantitative results and draw more insightful conclusions (Grbich, 2022; Vaismoradi & Snelgrove, 2019). Two of the themes were ultimately chosen for this study after they were labeled, and defined. The findings of this study then revealed the themes to perceptions of lifelong learning and lifelong learning competencies as well as the factors influencing them.

6.4. Results and Discussion
6.4.1. Understanding on Lifelong Learning and Lifelong Learning Competencies
The first research question attempted to explore how the teacher trainers perceived lifelong learning and its competencies. They found that everything is changing at an incredible rate in the modern time, and teaching is not an exception. Therefore, they understood lifelong learning to be keeping current with contemporary developments. Through reflection, everyone learns consciously and unconsciously throughout their lives and applies what they have learned and where they should apply it. The majority of their perceptions about lifelong learning come from their teaching profession.

All of the teacher trainers view that lifelong learning of a person can be measured by communicating with them and gauging their professional performance and attitude while only one teacher trainer respond that it is impossible to assess the lifelong learning of a person. It is supposed that none of them recognise that eight key competencies can be used to determine whether or not a person practices lifelong learning.

Then, they are explained about eight key competencies and asked to assess themselves which are their highest and lowest competencies. The figure 6.1 showed that their perceptions on highest and lowest competencies of lifelong learning.
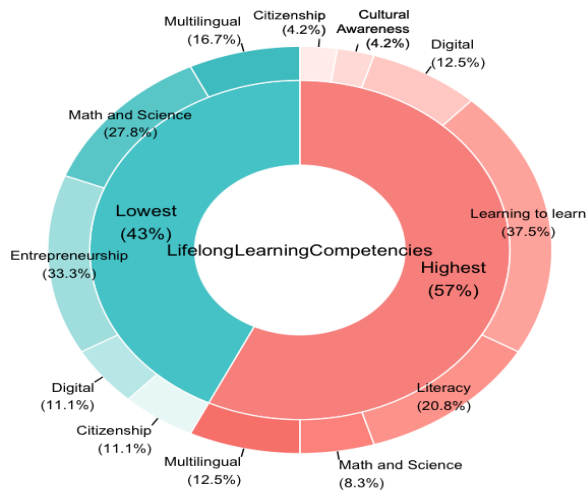
Figure 6. 1 Highest and lowest competencies of lifelong learning of teacher trainers

6.4.2. Factors that foster or hide each lifelong learning competency

Their opinions on the reason for their highest and lowest level in their various competencies were continually sought. Most of the teacher trainers believes that no gender, age, region of the Education Degree Colleges, education level and teaching service can make their lifelong learning competencies higher and lower. TT 1mentioned that her lifelong learning competencies are only partially associated with her teaching experience and the area of her education degree college. They may have lifelong learning competencies that are related to their teaching experience, according to TT5 and TT7 who concurred with TT1. TT5 additionally pointed out that education level might also be an influencing factor on her lifelong learning competencies. TT 8 also viewed that her lifetime learning competencies may be impacted by the region of the education degree college. TT 9 concurred with TT 1 and TT 8 by highlighting that we just obey directions from those in higher positions in education degree colleges and are not allowed to go beyond that. Our entrepreneurial competence cannot be increased in this manner. She also believed that being a woman who is frightened of making a mistake may be a contributing factor to having low levels of entrepreneurial competence. TT 10 revealed that age may be associated with having weak mathematical and science competence.

In addition to the background factors listed above, other factors contributed to determining each competency of lifelong learning competencies. They revealed fostering factors by focusing on their highest competences, which include learning to learn, literacy,

multilingual, and digital. TT1 recognized that she was a fast learner, so she learned what she needed to succeed in her job if the skill qualified her for promotion. TT2 is also interested in learning new things related with the profession. The TT 3 believed that she was good at multilingual competence due to the fact that her first teacher, her grandfather, taught her English. A previous job in a media and advertising company also contributed to TT 4's perception of himself as a fast learner and as a competent digital professional. Also, TT 5 believed that she had an opportunity to join foreign language course and focus learning English and thus become competent in multilingualism. According to TT 6, if a person is interested in something and is familiar with it, they are more likely to want to learn more about it. TT 7 enjoys her job as a teacher trainer, despite some challenges, and keeps learning about the new curriculum. Consequently, she becomes more capable of learning. TT8 also considered that practicing and developing habits are related to having higher competence in learning to learn. TT 9 believed that because mathematics was her university's specialized major, she would become knowledgeable and interested in the subject. If the individuals around her are skilled at something, TT 10 is going to become interested in learning it. In the same way as TT7, TT11 is very enthusiastic about participating in the new curriculum training as well as learning for personal growth. TT 12 indicates she has learned something and has applied it due to the incentive of a promotion and her concept is identical with TT1's.

The factors that can limit their scientific and mathematical competency, as well as their entrepreneurial and multilingual competency, were additionally highlighted by the teacher trainers. The majority of them stated that their lower level in these abilities was caused by a lack of confidence, interest, awareness, and drive. Another consideration is that their competence levels may not be high if they do not believe they will have the opportunity to use these skills in their current position or if these competencies have no connection to the teaching profession. TT 3 believed that because she was raised in an ordinary household, she lacked any entrepreneurship abilities. According to TT 8, a low level of entrepreneurial competence may be linked to a fear of failing. TT 7 made the claim that she is overworked in her department, is depressed, and that these factors have reduced her capacity for lifelong learning. She adds that health and family history are the next crucial factors that might have an impact on these competencies. This viewpoint resembles to that of TT 9, who believes that genetics may also be vital to the development of these competencies.

6.4.3. New learning Community

All teacher trainers indicated that the global pandemic had drastically changed their learning community. However, their perspectives and experiences, particularly with regard to the lifelong learning competencies, diverge. Most of the teacher trainers claimed that their multilingual and digital competencies are improved after the pandemic.

They had extra time to get acquainted with new digital tools and software because the schools were closed so they could stay home and participate in the online training. On the other side, TT 6 admitted to herself that training programs like the TREE program had ended and that she had stopped learning English and using the computer, but she focused how to teach the new curriculum to her students. Views of TT 8 are also different because she had more options to sign up in courses both online and offline after the pandemic, which has increased her competence in learning to learn than previously. TT 4 and TT 7 noticed that their digital competence is already good and get the chance to apply it after the pandemic.

Nevertheless, TT 2 and TT 7 discovered that there are also drawbacks; if there are any questions in online class, it is not convenient to ask the trainers because there is no face-to-face instruction. TT 3 also discussed her experience who is pursuing her PhD in China and returned to Myanmar following the pandemic. Due to the fact that everyone around her speaks Burmese at the moment, she feels that her competence in multilingual, particularly English and Chinese, has dropped. In spite of this, she continues to write her dissertation motivated by herself. TT 4 talked about his individual changes. He was fired from the media and marketing firm after the outbreak. He made the decision to get a master's degree and subsequently joined the academic community. He found that learning strategies changed as the number of lessons was reduced during the pandemic. The analysis of interview data revealed that learning community of the teacher trainers become new after the pandemic. Their lifelong learning capacities, particularly in the areas of digital competence and multilingual competence, are affected both favorably and unfavorably by this new learning community. Nevertheless, they still prefer in-person learning.

6.4.4. Learning Strategies and Teaching Competencies

According to the findings of our quantitative studies, learning strategies of teacher trainers applied to improve teacher competencies are associated with their lifelong learning competencies. But it did not show that which specific learning strategies they are practicing. This interview data show that how and which learning strategies the teacher trainers use to

improve the teaching competencies. To gain teaching competencies, most of them used self-regulated learning strategies. As the representative example, TT 1 said

> *"It is a transition period to implement the new curriculum for the four-year degree colleges. I have to learn a lot myself how to teach the new curriculum to the student teacher because my colleagues are too busy to share their ideas and all are pursing studies their Master and Phd degrees locally and aboard."*

As less experienced teacher trainers, TT 3 and TT 4 argued that they usually do lesson study with the head of their department and experienced colleagues before they deliver the lesson in the classroom. They prefer, however, to study on their own if possible. TT 5 and TT 9 recognised themselves that they learn through reading books, watching online video tutorial, imitation, observation and reflection. However, they understand that collaborative learning should be also practiced.

It is noteworthy that there were some different opinions regarding their learning strategies. Two teacher trainers prefer learning strategies collaboratively with their colleagues because it provided the different ideas of the colleagues. They want to join more new curriculum trainings and school support to improve their teaching competencies. TT 12 said

> *"I prefer formal learning and expect the organizational arrangement as I cannot decide the appropriate training informally."*

All the teacher trainers believed that teaching competencies are related with the lifelong learning competencies. Because they reflected that their competencies in lifelong learning are also improved while they are studying to improve teaching competencies. However, each competence improved vary individually. Some teacher trainers believed that literacy competence, multilingual competence and cultural awareness competence are significantly improved. They believed their literacy and multilingual skills were improving since they continue to learn in Burmese and use English text books and teacher manuals. Since the new curriculum is developed based on the diverse cultures, their cultural competence also becomes higher. On the other hand, as they learn to apply the new teaching method and create the teaching learning resources, they believe that their entrepreneurial competence is also obviously increased. When the new curriculum provides them a chance to apply their digital

skills into their teaching practice, their digital competence is also sharped. One of the teacher trainers feel that her student teachers are better than her in digital competence.

Some teacher trainers offered a couple of suggestions for enhancing teaching and lifelong learning competencies and anticipated some assistance at the institutional level. The following is an overview of their suggestions:

- Teacher trainers should be pre-assessed for particular competencies before undergoing formal training.
- Training must be conducted by experts who have experience in the field.
- It is not enough to have training; it is necessary to have practical experience.
- Computer use should be encouraged to improve digital competency since exposure is crucial.
- A post-training assessment should also be conducted.
- Teacher trainers should be interested in lifelong learning and should regularly evaluate themselves.
- Focus on taking good care of the health and engaging in reflective thought, which has nothing to do with how much time they have.
- It is essential to be aware of and pay attention to lifelong learning.
- Offering a supportive learning community and incentives, such as promotions, is essential for improving lifelong learning.
- It must accept challenges in order to improve lifelong learning competencies.

6.4.5. Influencing Factors on Lifelong Learning Competencies of Teacher Trainers

Two main themes emerged from all the responses of the teacher trainers, each of which highlighted the influencing factors on lifelong learning competencies. They are illustrated as Table 6.2. These two themes revealing the effects of internal and external variables on teacher trainers' lifelong learning competencies provides useful data for improving each competence in the future.

Table 6. 2 Internal and external factors influencing on lifelong learning competencies

Internal factors	External factors
Confidence	Promotion
Interest	Chance to apply in the teaching
Self-regulated learning	Profession
Attitude and performance	First teacher
Intelligence	Family background
Awareness	Workload
Laziness	Time management
Loving profession	Previous job experience
Health	Opportunities to learn
Afraid	Training
Practice and Habits	Pre-and post-assessment
Genetics	Collaborative learning
Enthusiasm	New curriculum
	Challenges
	Supportive learning community
	Shortage of teacher trainers

In spite of the fact that our interview was designed to emphasize their professional competencies and development with lifelong learning competencies, a few teacher trainers expressed personal development as well. For example,

> *"Having experienced the pandemic, I realize there are things we cannot control, so we must accept them, forgive ourselves and others, and become more understanding." TT1*

> *"I have become more entrepreneurial and courageous since the pandemic, and I see the potential in planning a second job outside of teaching." TT 11*

A lifelong learning process has different dimensions including a personal component, according to literature of Smith (2015) and Shrestha et.al (2008). It was called horizontal integration by Kálmán (2016), in which learning activities were harmonised.

6.5. Limitations and Suggestions

This study has some limitations. As the interview questions were developed based on the results of previous quantitative studies, they cannot be comprehensive interview protocol for the international contexts. Secondly, it is applied the purposive sampling method, the influencing factors on the lifelong learning competencies depend only on the opinion of selected interviewees. There might be other internal and external factors that have impact on lifelong learning competencies which cannot be discovered by the current study. Therefore, this study calls next investigations of the possible factors on lifelong learning competencies of teacher trainers in both Myanmar and international contexts. It is also important to note that

our research tools are designed to explore the perceptions of lifelong learning competencies, but not the tests to measure the actual competency level of lifelong learning. However, our study highlights the needs of building the tests to assess the levels of lifelong learning competencies.

6.6. Conclusion

The present study explored more possible factors that can influence on lifelong learning competencies of teacher trainers. First of all, it revealed the teacher trainers perceived lifelong learning as learning to be keeping current with contemporary developments, focusing on their teaching profession. None of them are aware that a person's ability to engage in lifelong learning can be assessed using eight essential competencies. However, they reported themselves that their highest competences are while the lowest are their scientific and mathematical competence, as well as their entrepreneurial and multilingual competence. They stated that their competence for learning to learn, literacy, multilingual, and digital were at the highest level of their list, while their competence for science and math, as well as entrepreneurial and multilingual, were at the bottom. Secondly, it found that the majority of teacher educators hold the opinion that no factor, including gender, age, region of the education degree colleges, educational level, or area of employment, may affect the level of their lifelong learning competencies.

Additionally, their learning community changed due to the pandemic, which affected their digital competence as well as their multilingual competence. Fourth, teacher trainers practiced self-directed learning and collaboration in order to improve their teaching competencies. As a result of this approach, their lifelong learning competencies are also enhanced. These findings reveal that internal and external factors play the greatest role in shaping teacher trainers' lifelong learning competencies in Myanmar. Results of the study can be used to establish a strategic road map for lifelong learning, arrange professional development training in the light of lifelong learning, and promote each of the lifelong learning competencies in Myanmar.

7. GENERAL CONCLUSION

7.1 Research aims

The major goals of this research were to investigate the perceptions of teacher trainers on lifelong learning and their perceived level of lifelong learning competencies and to explore the influencing factors of their lifelong learning competencies. As a means of achieving these goals, we posed five main research questions as well as specific research aims and research questions for each chapter. The five key research questions were outlined as follows:

1. What are the perceptions of teacher trainers of the concept of lifelong learning?

2. Are there any significant differences in the lifelong learning competencies of teacher trainers according to their background factors?

3. What are the factors that promote or hinder the lifelong learning competencies of teacher trainers?

4. What learning strategies do teacher trainers use to improve their teacher competencies?

5. How can lifelong learning of teacher trainers influence their new learning community?

In order to address these overall research questions, the mixed method design was applied based on the research gaps identified in the literature review. A quantitative approach was taken to address the first two research questions, while a qualitative approach was taken to address the next three.

In order to fulfill the primary objectives of this research, each study's specific objectives are listed as follows. In order to present current information on lifelong learning in educational research, a systematic review of the literature from 2000 to 2022 was conducted. It made an effort to develop a theoretically standardized Lifelong Learning Competencies Scale for teacher trainers in the Myanmar environment in order to be used in the formal study, and it also carried out an empirical investigation of its reliability and validity as a result of examining the previous research instruments. Regression models were created with the intention of predicting teacher trainers' lifelong learning competencies based on their perceptions on lifelong learning, their learning strategies, and other professional and personal aspects. The formal study's objectives were to analyze each competency of teacher trainers' lifelong learning and examine the associations between perceptions of lifelong learning, competencies for lifelong learning,

and learning strategies. The final component of the formal study, the qualitative part, aimed to explore additional factors that might have an impact on how teacher trainers perceive their competencies to engage in lifelong learning based on the new learning community, teaching competencies, and learning strategies.

7.2 Research findings and discussion
The research study generated the following key findings:

The most well-known ideas of lifelong learning were identified through the systematic evaluation of the literature as lifelong learning policies, lifelong learning competences, and formal, nonformal, and informal learning. It is shown that theoretical papers—such as reports, recommendations, and explanations for lifelong learning—are typically significantly deeper and more detailed than empirical investigations. Until recently, there has been little development and application of a strong theory of lifelong learning. Three common research trends: issues with basic concepts or guiding principles of lifelong learning, problems surrounding lifelong learning capacities, and challenges regarding variables that affect lifelong learning and/or lifelong learning capacities were also discovered. The Asian context and mixed methods research are still underrepresented in these research trends. In these common research problems, many data analysis methods, such as content analysis, descriptive analysis, and inferential analysis, can be used. Students, primary and secondary school teachers, undergraduates, postgraduates, student teachers, European Union Lifelong Learning experts, young people, teacher educators, administrators, and academic staff were all engaged with the studies under investigation.

The LLLCS we created for teacher trainers are reliable and valid for our main study based on the pilot study. Its overall reliability is high ($\alpha = 0.89$) and discriminant validity is acceptable (Satorra–Bentler scaled chi-square = 381.014, $df = 296$, $p \leq 0.001$, robust CFI = 0.92, robust TLI = 0.91, robust RMSEA = 0.05, robust SRMR = 0.06). In essence, LLLCS has 27 items which belongs to eight domains: Literacy competence (LiC), with three items; Multilingual competence (MuC), with three items; Mathematical competence and competence in science, technology and engineering (MaSC), with six items; Digital competence (DiC). with three items; Learning to learn competence (LLC), with three items; Citizenship competence (CiC), with three items; Entrepreneurship competence (EnC), with three items; and Cultural awareness and expression competence (CuC), with three items. The reliability results for each factor are high at the Cronbach's $\alpha = 0.88$ for LiC, $\alpha = 0.88$ for MuC, $\alpha = 0.87$

for MaSC, $\alpha = 0.88$ for DiC, $\alpha = 0.87$ for LLC, $\alpha = 0.87$ for CiC, $\alpha = 0.88$ for EnC and $\alpha = 0.87$ for CuC, respectively. Additionally, construct validity showed the reliability and valid convergence with AVE and CR greater than 0.6. LLLCS designed on the European Framework has also good construct, content, and face validity. Overall, these results suggest that the LLLCS, which has eight components and 27 items, could be appropriate for use in further study.

Our investigation into the first two main research questions involved conducting two distinct quantitative studies. In the first study, we focused on regression models. The findings from this study are as follows: According to three regression models, perceptions regarding lifelong learning and learning strategies are important determinants of lifelong learning competencies. The first regression model showed that perceptions regarding lifelong learning, learning strategies and the region of the education college are related with lifelong learning competencies of teacher trainers. When solely personal aspects are taken into account, the second model states that lifelong learning competencies are unrelated to individual traits like age or gender. According to the third model, lifelong learning competencies also depend on the location of the education degree college and teaching experience when purely professional considerations are taken into consideration. The third model, which included factors including region, teaching experience, perception of lifelong learning, and learning strategies, was subsequently found to be the most effective regression model for predicting LLL competencies in teacher trainers.

According to our second quantitative study, the perception of teacher trainers of lifelong learning and lifelong learning competencies are high in general. In particular, their highest perceived level of lifelong learning competencies is learning how to learn but the lowest level in math and science. They employed the learning strategies to enhance their teaching competencies as well. Their perceptions on lifelong learning, lifelong learning competencies and learning strategies are not affected by gender, education level and teaching service. Only the region of the Education Degree College can have a big impact on them. Region has significant impact on multilingual competence, digital competence, learning to learn competence, citizenship competence, entrepreneurship competence, and cultural awareness competence but not on literacy, mathematics, and science competence. Age also has an effect on perception of lifelong learning and learning strategies. Although age does not influence the overall lifelong learning competencies, it can have an influence on each competence; literacy

competence, digital competence and citizenship competence. The teaching service can only have an impact on the digital competence. The correlation between lifelong learning competencies and learning strategies was stronger than that between lifelong learning perceptions.

We answered the last three main research questions through the qualitative study. According to findings of this study, more possible factors that can have an influence on lifelong learning competencies of teacher trainers were explored. According to teacher trainers, lifelong learning means staying up to date on modern advancements while concentrating on the teaching profession. They are all unaware that there are eight crucial competencies that can be used to evaluate someone's capacity for lifelong learning. They claimed that the highest levels of their list of competencies were in learning to learn, literacy, multilingualism, and digital, while the lowest levels were in science and math, as well as in entrepreneurship and multilingualism. The majority of them believe that no element, including gender, age, the location of the colleges where they are performing, their educational level, or their field of employment, may have an impact on the level of their lifelong learning competencies. Both their multilingual and digital competency were impacted by their new learning environment. In order to develop their teaching abilities, which improved lifelong learning abilities, teacher trainers engaged in collaborative and self-directed learning activities. Lifelong learning competencies of teacher trainers are determined in part by internal factors such as confidence, interest, self-regulated learning, attitude and performance, intelligence, awareness, laziness, loving profession, health, afraid, practice and habits, genetics and enthusiasm. The external factors that can also influence are promotion, chance to apply in the teaching profession, first teacher, family background, workload, time management, previous job experience, opportunities to learn, training, pre-and post-assessment, collaborative learning, new curriculum, challenges, supportive learning community and shortage of teacher trainers.

In essence, the first main research question's answer is that teacher trainers' lifelong learning competencies are greatly impacted by their perceptions of learning strategies and lifelong learning. They believe they possess high levels of competencies for lifelong learning, especially in learning how to learn. The second main research question has an answer that explains how perceived competencies vary across domains, with lower levels found in subjects like science and mathematics. It's interesting to note that, with the exception of the Education Degree College's region, demographic factors like gender, education level, and teaching service

had no obvious effect on these points of view. The third main research question has an answer of our research offering thorough insights into the variables impacting teacher trainers' lifelong learning competencies, including both internal characteristics and external circumstances. In relation to the fourth main research question, teacher trainers enhanced their capacity for lifelong learning by participating in cooperative and self-directed learning activities. The solution to the fifth major research question is that teacher trainers' lifelong learning positively affects their new learning community. The results mentioned above highlight multiple facets of lifelong learning and provide significant insights for improving practices related to it in the teaching profession.

7.3 General Limitations and Directions for future studies

The whole research has limitations that can be addressed in future research. Following is a list of the main limitations and recommended future studies of each study.

The literature review may have missed a number of empirical research because we only included open-access articles that were indexed in Scopus, WoS, or ProQuest. The outcomes might change as a consequence of additional study. It did not mention in depth both the specifics of the research tools and the outcomes of prior empirical studies. Future lifelong learning systematic reviews and meta-analyses incorporating content from other databases may be carried out. Future reviews may also look at the background and psychometrics of the research tools used in lifelong learning and take into account the findings of each empirical analysis.

With a small sample of teacher trainers, the main instrument, LLLCS, was created. There should be more research done with more participants, including pre-service teachers and in-service teachers from all levels of the educational system. Despite being a reliable and acceptable tool, it contains generalized and translated items regarding lifelong learning competencies. With regard to the eight domains that the European Commission has adopted, a few changes must be taken into thought when translating LLLCS into different situations. Future LLLCS should be evaluated using additional validity measures, such as criteria concurrent validity, criterion predictive validity, and criterion postdictive validity.

Because there were few studies that looked at the lifelong learning competencies of teacher trainers, the results of the individual empirical studies conducted for this research were not well discussed or compared with participants from earlier studies. This may have led to some variations in interpretation between samples. Each empirical quantitative study considered only

the relationships between three research variables. Future research will be able to look at how each competency of lifelong learning competencies is impacted by perceptions of lifelong learning and/or learning strategies.

Regression models, the formal analysis of this research, and other studies all produced contradictory results, therefore the qualitative study looked into additional variables that can support or undermine LLL abilities. The interview questions, however, cannot serve as a thorough interview protocol for the contexts abroad because they were created using the findings of earlier quantitative investigations. Due to the application of the purposive sampling approach, the impacting factors on the lifelong learning competencies are solely dependent on the opinions of the chosen respondents. Other internal and external factors that affect lifelong learning competencies might exist but were not discovered in this research. As therefore, this study recommends further research into the potential influences on teacher trainers' competencies for lifelong learning in both Myanmar-specific and global contexts.

7.4 General Educational Implications

This study remains important to the Myanmar context, as well as to global contexts, despite the aforementioned limitations. A number of theoretical and methodological contributions have been made by this study.

7.4.1 Theoretical Implications

A theoretical contribution was made to the area of education science and lifelong learning through this study. The literature review for this study was the first systematic one to identify educational research concepts, theories, trends, and research methods related to lifelong learning. Furthermore, this is the first study in Myanmar to examine the lifelong learning competencies of teacher trainers. Among the few studies on teacher education that use teacher trainers rather than student teachers, this is also one of the few studies involving teacher trainers.

In addition, it extends previous findings by demonstrating that lifelong learning competencies are associated with perceptions of lifelong learning and learning strategies. A feasible policy to implement lifelong learning competencies in Myanmar's formal and non-formal education sectors may be established with the contribution of this research. National lifelong learning initiatives should include detailed plans that emphasize preparation for educators, public awareness, formal and informal training, as well as creating environments for informal learning. In other words, the empirical results of this research can be used to create a

strategic educational road map, plan professional development training for lifelong learning, and promote each of the lifelong learning competencies in Myanmar.

7.4.2 Methodological Implications

The systematic literature review of this research is the first one which follows the PRISMA 2020 in the lifelong learning research area. The main instrument, the Lifelong Learning Competency Scale (LLLCS), is also the first research tool that is both theoretically standardised and complies with standardised psychometrics. LLLCS is the initial step in developing an excellent instrument for lifelong learning research. This study indicates the necessity of designing tests to evaluate the levels of lifetime learning competencies, despite the fact that it is not a test that truly assesses lifelong learning competency.

It filled the knowledge gaps that were left by the paucity of empirical research in the Asian context. Additionally, it is one of the few empirical studies that employed mixed methods research. It is also one of the few studies that looked at each lifelong learning competency individually.

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APPENDIX A. LIFELONG LEARNING COMPETENCIES QUESTIONNAIRE (ENGLSIH VERSION)

Section A

Personal and demographic information

Please place a tick in the appropriate box for the following questions.

1. What is your gender?

Male ☐   Female ☐

2. How old are you?

20-30 years old ☐

31-40 years old ☐

41-50 years old ☐

Over 50 years old ☐

3. What is your level of education?

PhD ☐

M.Ed/MA/M.Sc ☐

B.Ed/BA/B.Sc ☐

Others ☐

4. Which Education Degree College do you work?

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5. How many years of teaching experience have you got as a teacher trainer?

1-5 years ☐

6-10 years ☐

11-15 years ☐

Over 15 years ☐

6. Which subjects do you teach?

1	Educational Studies	
2	Myanmar	
3	English	
4	Mathematics	
5	Science	
6	Social Studies	
7	Local Curriculum	
8	Physical Education	
9	Life Skills	
10	Art	
11	Morality and Civics	
12	ICT	

Lifelong Learning Competencies Questionnaire

To what extent do you agree or disagree with the following statements regarding the perception on lifelong learning, lifelong learning competencies and Learning Strategies? Please, tick (√) the suitable answer.

Strongly Disagree =1; Disagree = 2; Agree = 3; Strongly Agree =4

No	Items	1	2	3	4
	Perception on Lifelong learning				
1	Lifelong learning is very important for a teacher trainer.				
2	Lifelong learning of a teacher trainer needs to be developed in this rapid changing world.				
3	Lifelong learning differs to personal factors such as age, gender, level of education and teaching experience				
4	Lifelong learning can be seen as capability and performance.				
5	Lifelong learning transmits from culture to culture.				
6	Lifelong learning is also education for employability.				
7	Lifelong learning can improve personal and professional developments.				
8	Lifelong learning becomes necessary because of globalization.				
9	Lifelong learning can upgrade national economic growth.				
	Lifelong Learning Competencies				
	Teacher trainer use learning strategies to implement the following competencies and then become……				
	Literacy competence				
10	Aware of the main types of verbal interaction, a range of literary and non-literary texts, and the main features of different styles and registers of Myanmar language.				
11	Be able to communicate both orally and in writing in a variety of situations and to monitor and adapt their own communication to the requirements of the situation.				
12	Aware of the impact of language on others and a need to understand and use language in a positive and socially responsible manner.				
	Multilingual competence				
13	Have knowledge of vocabulary and functional grammar of different languages and an awareness of the main types of verbal interaction and registers of languages.				
14	Be able to use tools appropriately and learn languages formally, non-formally and informally throughout life.				
15	Appreciate of cultural diversity, an interest and curiosity about				

	different languages and intercultural communication.				
	Mathematical competence and competence in science, technology and engineering				
16	Know and understand mathematical terms and concepts, and questions to which mathematics can offer answers.				
17	Have the skills to apply basic mathematical principles and processes (statistical data and graphs) in everyday contexts at home and work.				
18	Pay respect for truth and a willingness to look for reasons and to assess their validity.				
19	Better understand the advances, limitations and risks of scientific theories, applications and technology in Education at large (in relation to decision-making, values, moral questions, culture, etc.).				
20	Use and handle technological tools and machines as well as scientific data to achieve a goal or to reach an evidence-based decision or conclusion.				
21	Have an attitude of critical appreciation and curiosity, a concern for ethical issues and support for both safety and environmental sustainability, in particular as regards scientific and technological progress in relation to oneself, family, community, and global issues.				
	Digital competence				
22	Understand how digital technologies can support communication, creativity and innovation, and be aware of their opportunities, limitations, effects and risks.				
23	Use digital technologies to support their active citizenship and social inclusion, collaboration with others, and creativity towards professional goals.				
24	Have a reflective and critical, yet curious, open-minded and forward-looking attitude to their evolution. It also requires an ethical, safe and responsible approach to the use of these tools.				
	Personal, social and learning to learn competence				
25	Know my preferred learning strategies, competence development needs and various ways to develop competences and search for the education, training and career opportunities and guidance or support available.				
26	Have the ability to learn and work both collaboratively and autonomously and to organise and persevere with one's learning, evaluate and share it.				
27	Apply prior learning and life experiences and the curiosity to look for opportunities to learn and develop in a variety of life contexts.				

	Citizenship competence				
28	Understand of the multi-cultural and socioeconomic dimensions of all ethnics, and how national cultural identity contributes to the Myanmar identity.				
29	Engage effectively with others in common or public interest, including the sustainable development of society.				
30	Support for social and cultural diversity, gender equality and social cohesion, sustainable lifestyles, promotion of culture of peace and non-violence, a readiness to respect the privacy of others, and to take responsibility for the environment.				
	Entrepreneurship competence				
31	Know that there are different contexts and opportunities for turning ideas into action in professional activities, and understand of how these arise.				
32	Work both as an individual and collaboratively in teams, to mobilize resources (people and things) and to sustain activity.				
33	Motivate students and value their ideas, empathy and taking care of people and the world, and accepting responsibility taking ethical approaches throughout the process.				
	Cultural awareness and expression competence				
34	Have knowledge of local, national, Asians, European and global cultures and expressions, including their languages, heritage and traditions, and cultural products, and an understanding of how these expressions can influence each other as well as the ideas of the individual.				
35	Have the ability to express and interpret figurative and abstract ideas, experiences and emotions with empathy, and the ability to do so in a range of arts and other cultural forms.				
36	Have an open attitude towards, and respect for, diversity of cultural expression together with an ethical and responsible approach to intellectual and cultural ownership.				
	Learning Strategies				
	In order to improve my professional development, I				
37	Set own learning goals.				
38	Set professional development goals.				
39	Reviewing goals when it is necessary.				
40	Identify learning strategies.				
41	List the strategies				
42	Modify and adapt learning strategies when they are unsuccessful				
43	Motivate myself to learn				
44	Attend appropriate workshops and new curriculum training				
45	Attend professional development programs such as EffECT				

APPENDIX B. LIFELONG LEARNING COMPETENCIES QUESTIONNAIRE (BURMESE VERSION)

<u>ပညာရေးဒီဂရီကောလိပ်ရှိ ဆရာ/မများ၏ ဘဝတသက်တာသင်ယူမှုစွမ်းရည်ကို စူးစမ်းလေ့လာသည့်</u>

<u>မေးခွန်းလွှာ</u>

မေတ္တာရပ်ခံချက်။ ။ဤမေးခွန်းလွှာမှာ ပညာရေးဒီဂရီကောလိပ်ရှိ ဆရာ/မများ၏ ဘဝတသက်တာသင်ယူမှုစွမ်းရည်ကို စူးစမ်းလေ့လာသည့် မေးခွန်းလွှာ ဖြစ်ပါသည်။ ဆရာ/ဆရာမတို့၏ ဖြေဆိုချက်များကို သုတေသနပြုလုပ်ရန်သာ စိစစ်လေ့လာမည်ဖြစ်၍ မည်သို့မျှ ထိခိုက်ခြင်းမရှိစေရပါ။ မေးခွန်းလွှာတွင် အမည်ရေးသွင်းရန်မလိုသည့်အပြင် ဖြေဆိုချက်များကို အများသိအောင်ကြေညာခြင်း လုံးဝပြုလုပ်မည် မဟုတ်ပါ။ သို့ဖြစ်ပါ၍ အရှိကိုအရှိအတိုင်း ပွင့်လင်းစွာဖြေဆိုပေးပါရန် လေးစားစွာမေတ္တာရပ်ခံအပ်ပါသည်။

<div align="right">

လေးစားစွာဖြင့်

(signature)

(ကျမ်းပြုစုသူ)

မဂင်းဖြူသွယ်

PhD student (third year)

Doctoral School of Education

University of Szeged, Hungary

</div>

အပိုင်း(က)

ညွှန်ကြားချက်။ ။မေးခွန်းအားလုံးကို ဖြေဆိုပါ။ မိမိနှင့် ဆီလျော်သည့်အကွက်တွင်သာ အမှန်(√) ခြစ်ပါ။
လိုအပ်သောနေရာများတွင် ကိန်းဂဏန်းများ၊ စာသားများဖြင့် ဖြည့်စွက်ပါ။

ကိုယ်ရေးအချက်အလက်များ

၁။ ကျား/မ

ကျား ☐ မ ☐

၂။ အသက်

၂၀-၂၅ နှစ် ☐ ၂၆-၃၀ နှစ် ☐ ၃၁-၃၅ နှစ် ☐

၃၆-၄၀ နှစ် ☐ ၄၁ နှစ်နှင့်အထက် ☐

၃။ အမြင့်ဆုံးပညာအရည်အချင်း

မဟာပညာရေးဘွဲ့ ☐ မဟာဘွဲ့ ☐ ပညာရေးဘွဲ့ ☐

ဝိဇ္ဇာ/ သိပ္ပံဘွဲ့ ☐

အခြားဘွဲ့ဖြစ်လျှင်ဘွဲ့အမည်ဖော်ပြရန် ....

၄။တာဝန်ထမ်းဆောင်နေသောပညာရေးဒီဂရီကောလိပ်..

၅။ ပညာရေးဒီဂရီကောလိပ် စုစုပေါင်းလုပ်သက်

၅ နှစ်နှင့်အောက် ☐ ၆-၁၀ နှစ် ☐ ၁၁-၁၅ နှစ် ☐

၁၆-၂၀ နှစ် ☐ ၂၁ နှစ်နှင့်အထက် ☐

၆။ သင်ကြားနေသောဘာသာရပ်...

အပိုင်း(ခ)

ညွှန်ကြားချက်။ ။အောက်ပါဖော်ပြချက်များမှ မိမိ၏သဘောထားအမြင်နှင့် ကိုက်ညီမှုရှိသည်ဟု ယူဆသောနေရာတွင် အမှန်အမှတ်အသား(✔)ခြစ်ပါ။

၁။လုံးဝသဘောမတူပါ ၂။သဘောမတူပါ ၃။သဘောတူပါသည် ၄။အလွန်သဘောတူသည်။

	အဆိုပြုချက်	၁	၂	၃	၄
	ဘဝတက်တာသင်ယူမှုအပေါ် သဘောထားအမြင်				
၁	ဘဝတက်တာသင်ယူမှုသည် ဆရာဆရာများအတွက် အရေးကြီးပါသည်။				
၂	လျင်မြန်စွာပြောင်းလဲနေသော ကမ္ဘာကြီးတွင် ဆရာဆရာများ၏ ဘဝတက်တာသင်ယူမှု တိုးတက်ရန်လိုအပ်ပါသည်။				
၃	ဘဝတက်တာသင်ယူမှုသည် အသက်၊ ကျား/မ၊ ပညာအရည်အချင်းနှင့် သင်ကြားရေး အတွေ့အကြုံအလိုက် ကွာခြားပါသည်။				
၄	ဘဝတက်တာသင်ယူမှုကို စွမ်းဆောင်ရည်အဖြစ်မှတ်ယူနိုင်ပါသည်။				
၅	ဘဝတက်တာသင်ယူမှုသည် လူနေမှုပုံစံကိုဖြစ်ပေါ်စေပါသည်။				
၆	ဘဝတက်တာသင်ယူမှုသည် အလုပ်အကိုင်အတွက်ပညာရေးလည်းဖြစ်ပါသည်။				
၇	ဘဝတက်တာသင်ယူမှုသည် တစ်ကိုယ်ရည်တိုးတက်ရေးနှင့် အသက်မွေးဝမ်းကျောင်းဆိုင်ရာ တိုးတက်ရေးကို မြှင့်တင်ပေးနိုင်ပါသည်။				
၈	ကမ္ဘာကြီးသည် ရွာကြီးဖြစ်လာသောကြောင့် ဘဝတက်တာသင်ယူမှုသည် မရှိမဖြစ်လိုအပ်လာပါသည်။				
၉	ဘဝတက်တာသင်ယူမှုသည် နိုင်ငံ့စီးပွားရေးဖွံ့ဖြိုးမှုကို မြှင့်တင်ပေးနိုင်ပါသည်။				
	ဘဝတက်တာသင်ယူမှုစွမ်းရည်များ				
	ဆရာဆရာများသည် ဘဝတက်တာသင်ယူမှုစွမ်းရည်များကို ပိုင်ဆိုင်နိုင်ရန် သင်ယူမှု နည်းဗျူဟာများကို အသုံးပြုပြီးနောက်တွင်				
	စာပေစွမ်းရည်				
၁၀	မြန်မာဘာသာစကား၏ အဓိကကျသော မတူညီသော ပုံစံအမျိုးနှင့် အရေး၊ အဖတ်၊ အပြောစကားများကို သိရှိပါသည်။				
၁၁	အခြေအနေပေါ်မူတည်၍ နှုတ်ဖြင့်ဖြစ်စေ၊ စာရေးသား၍ဖြစ်စေ ညှိနိုင်း၍ ဆက်သွယ် ဆက်ဆံနိုင်ပါသည်။				
၁၂	ဘာသာစကား၏သက်ရောက်မှုနှင့် ဘာသာစကားကို ယဉ်ကျေးသောအပြုအမူဖြင့် နားလည် အသုံးပြုနိုင်ရန် လိုအပ်မှုကို သိရှိပါသည်။				
	နိုင်ငံခြားဘာသာစကားစွမ်းရည်				
၁၃	နိုင်ငံခြားဘာသာစကားများ၏ ဝေါဟာရနှင့်သဒ္ဒါ၊ အဓိကကျသော ပုံစံအမျိုးနှင့် အပြောစကားများ သိရှိပါသည်။				
၁၄	နိုင်ငံခြားဘာသာစကားကို ကျောင်းတွင်း၊ ကျောင်းပြင်ပနှင့် ဘဝတက်တာလုံး သင်ယူနိုင်သည့်နည်းများကို အသုံးပြုပါသည်။				
၁၅	မတူညီသော ယဉ်ကျေးမှုအမျိုးနှင့် ဘာသာစကားအမျိုးဖြင့် ဆက်သွယ်ခြင်းကို စိတ်ဝင်စား၍ တန်ဖိုးထားပါသည်။				
	သင်္ချာ၊ သိပ္ပံနှင့် နည်းပညာစွမ်းရည်				
၁၆	သင်္ချာဆိုင်ရာအသုံးအနှုန်းများ၊ အသိသညာများနှင့်မေးခွန်းများကို သိရှိနားလည်ပါသည်။				
၁၇	သင်္ချာဆိုင်ရာနည်းစည်းမျဉ်းများကို အိမ်နှင့်လုပ်ငန်းခွင်တွင် နေ့စဉ် အသုံးချနိုင်သည့် ကျွမ်းကျင်မှုရှိပါသည်။				
၁၈	ကျိုးကြောင်းဆိုင်လုံ့လကိုအကဲဖြတ်ရန်၊ အကြောင်းရင်းများကိုရှာဖွေရန် စိတ်အားထက်သန်မှုရှိပြီး အမှန်တရားကို လေးစားပါသည်။				
၁၉	ပညာရေးတွင် သိပ္ပံသီအိုရီများ၏ တိုးတက်မှုနှင့် အားနည်းချက်များ၊ အန္တရာယ်များ၊ အသုံးချပုံများနှင့် နည်းပညာကို ကောင်းစွာနားလည်ပါသည်။				
၂၀	သက်သေခိုင်လုံသည့် ဆုံးဖြတ်ချက်ချခြင်း၊ ကောက်ချက်ချခြင်းရရှိနိုင်ရန် သိပ္ပံ အချက်အလက်များနှင့် နည်းပညာပစ္စည်းများကို ကိုင်တွယ်အသုံးပြုနိုင်ပါသည်။				

	သင်ယူမှုနည်းဗျူဟာများ				
	သင်ကြားရေးစွမ်းရည်များ တိုးတက်စေရန်အတွက် အကျွန်ုပ်သည်				
၃၇	ကိုယ်ပိုင်သင်ယူမှုပန်းတိုင်များချမှတ်ပါသည်။				
၃၈	အသက်မွေးဝမ်းကျောင်းဆိုင်ရာ ဖွံ့ဖြိုးတိုးတက်ရေး ရည်မှန်းချက်ပန်းတိုင်များ ချမှတ်ပါသည်။				
၃၉	လိုအပ်သည့်အခါ ရင်းရည်မှန်းချက်ပန်းတိုင်များကို ပြန်လည်သုံးသပ်ပါသည်။				
၄၀	သင်ယူမှုနည်းဗျူဟာများကိုလည်း ခွဲခြားသတ်မှတ်နိုင်ပါသည်။				
၄၁	ရင်းသင်ယူမှုနည်းဗျူဟာများကို စာရင်းပြုစုပါသည်။				
၄၂	ရင်းသင်ယူမှုနည်းဗျူဟာများဖြင့် မအောင်မြင်သာအခါ ပြန်လည်၍ ပြင်ဆင်ည့်နိုင်းပါသည်။				
၄၃	သင်ယူမှုပြုလုပ်ရန် မိမိကိုယ်ကို တိုက်တွန်းအားပေးပါသည်။				
၄၄	သင်ရိုးညွှန်းတမ်းအသစ်အတွက် သင်တန်းများနှင့် ဆွေးနွေးပွဲများတက်ရောက်ပါသည်။				
၄၅	အသက်မွေးဝမ်းကျောင်းဆိုင်ရာ ဖွံ့ဖြိုးတိုးတက်ရေး အစီအစဉ်ဖြစ်သော EffECT and TREE သင်တန်းများ တက်ရောက်ပါသည်။				
၄၆	Covid- 19 ပေါ်ပေါက်လာသောအခါ သင်ယူမှုနည်းဗျူဟာများကို ပြောင်းလဲခဲ့ပါသည်။				
၄၇	သင်ယူမှုအခွင့်အလန်းများ ရှာဖွေရန် အင်တာနက်ကို အသုံးပြုပါသည်။				
	လုပ်ဖော်ကိုင်ဖက်များနှင့်လည်း အတူတကွ သင်ယူပါသည်				
၄၈	လုပ်ဖော်ကိုင်ဖက်များ ထံမှရရှိသော တုံ့ပြန်မှုများကိုလည်း ထည့်သွင်းစဉ်းစားပါသည်။				
၄၉	သင်တန်းသားများထံမှရရှိသော တုံ့ပြန်မှုများကိုလည်း ထည့်သွင်းစဉ်းစားပါသည်။				
၅၀	သင်ယူမှုနည်းဗျူဟာများကိုလည်း ပြန်လည်သုံးသပ်ပါသည်။				
၅၁	မိမိကိုယ်ကိုလည်းပြန်လည်အကဲဖြတ်စစ်ဆေးပါသည်။				

ဤသို့ ကူညီဖြေဆိုပေးသည့်အတွက်ကျေးဇူးတင်ပါသည်။

မဝင်းဖြူသွယ်

APPENDIX C. SEMI-INTERVIEW QUESTIONS (ENGLISH VERSION)

Semi-Interview Questions

General Question (Perceptions on Lifelong learning/Lifelong Learning Competencies)
1. How do you understand Lifelong learning?
2. How can you tell someone is practicing lifelong learning?
3. According to the European Commission, there are eight key competencies for lifelong learning.
   i. literacy competence
   ii. multilingual competence
   iii. mathematical and science competence
   iv. digital competence
   v. learning to learn competence
   vi. citizenship competence
   vii. entrepreneurship competence
   viii. cultural awareness and expression competence

   Among them, which are your highest and lowest competencies? Why do you think so?

Factors influencing on lifelong learning competencies

1. Based on his/her answers, how do you think these highest and lowest competencies are related with your background factors (eg. gender, age, education level, teaching service and region of the education degree college)?
2. Which any other factors can have the impact on improving lifelong learning competencies?
3. Which factors can hinder them?

New learning Environment

1. After Covid 19, how is your learning environment (including the College and Home) changed or remains the same?
2. Which areas are mostly changed and remain the same?
3. How do you think that these changes and non-changes can foster your any competence of lifelong learning competencies (eg. Multilingual competence, Digital competence)?

Learning Strategies

1. Which learning strategies do you use to improve your teaching competencies (eg. Self-regulated learning or collaborative learning or cooperative learning)?
2. Which one do you prefer to use?
3. By improving teaching competencies, how can you improve your lifelong learning competencies be also developed? Which competence?

APPENDIX D. SEMI-INTERVIEW QUESTIONS (BURMESE VERSION)

အင်တာဗျူးမေးခွန်း

ယေဘုယျ မေးခွန်း

ဘဝတသက်တာလေ့လာသင်ယူခြင်းကို မည်သို့နားလည်ပါသနည်း။

လူတစ်ယောက် ဘဝတသက်တာသင်ယူမှုရှိမရှိမည်သို့ အကဲဖြတ်နိုင်ပါသနည်း။

ဘဝတသက်တာသင်ယူမှုစွမ်းရည်များ

စာပေစွမ်းရည်

နိုင်ငံခြားဘာသာစကားစွမ်းရည်

သင်္ချာ၊ သိပ္ပံနှင့် နည်းပညာစွမ်းရည်

ဒီဂျစ်တယ်အသုံးပြုနိုင်မှုစွမ်းရည်

သင်ယူနိုင်သည့်စွမ်းရည်

နိုင်ငံသားတစ်ဦး၏စွမ်းရည်

စွန့်ဦးတီထွင်စွမ်းရည်

ယဉ်ကျေးမှုအမျိုးမျိုးကိုသိရှိ၍ဖော်ပြတတ်သည့်စွမ်းရည်

ဤ၈ြမျိုးအနက် အားအသာဆုံးနှင့် အားအနည်းဆုံး စွမ်းရည်ကို ပြောပြပါ။ အ�’ဘယ့်ကြောင့်နည်း။

ဂုင်းစွမ်းရည်များနဲ့သက်ဆိုင်မှုရှိသည့်အချက်များ

ကျား/မ၊ အသက်စသည့်တို့ဖြင့် သက်ဆိုင်သည်ဟု ထင်ပါသလား။

တခြားဘာကြောင့် အားသာတဲ့စွမ်းရည်ရှိတယ်ဟု ထင်ပါသလဲ။

အားနည်းတဲ့စွမ်းရည်ရစေတဲ့ အချက်က ဘာတွေလဲ။

သင်ယူမှုပတ်ဝန်းကျင်အသစ်

ကိုဗစ်၁၉ ကြောင့် သင်ယူမှုပတ်ဝန်းကျင် ပြောင်းလဲမှုရှိမရှိ ပြောပြပါ။

မည်သည့်နယ်ပယ်များတွင် ပြောင်းလဲသနည်း။

ဂုင်းပြောင်းလဲမှုများကြောင့် ဘဝတသက်တာသင်ယူမှုစွမ်းရည်များ တိုးတက်မှုရှိပါသလား။

မည်သည့်စွမ်းရည်များ တိုးတက်လာပါသလဲ။

သင်ယူမှုနည်းဗျူဟာ

သင်ကြားမှုစွမ်းရည်အတွက် မည်သည့်သင်ယူမှုနည်းလမ်းများကို အသုံးပြုသနည်း။

မည်သည့်သင်ယူမှုနည်းလမ်းကို ပို၍နှစ်သက်သနည်း။

သင်ကြားမှုစွမ်းရည်များမြှင့်တင်ရင်းဖြင့်ဘဝတသက်တာသင်ယူမှုစွမ်းရည်များတိုးတက်လာသည်ဟု ထင်ပါသလား။

မည်သည့်စွမ်းရည်များ တိုးတက်လာပါသလဲ။

APPENDIX E. THE ETHICAL APPROVAL FOR LIFELONG LEARNING COMPETENCIES QUESTIONNAIRE

University of Szeged

| Institutional Review Board
Doctoral School of Education | 6722 Szeged, 30-34 Petőfi S. Av., Hungary
Phone/fax: +36 62 544-032 |

Win Phyu Thwe
PhD Student: Doctoral School of Education
Reference number: 11/2022
Subject: Ethical evaluation of a research project

Date: 26 August, 2022

E T H I C A L   A P P R O V A L

The Insitutional Review Board (IRB) of the Doctoral School of Education, University of Szeged has recently reviewed your application for an ethical approval (Title of the Research Project: "**Implementing the Lifelong Learning Competencies for the Teacher Trainers in the new Learning Community**", supervisors: Dr. habil. Anikó Kálmán). This proposal is deemed to meet the requirements of the ethical conducts on social research with human subjects of the Doctoral School of Education, University of Szeged.

IRB decision: approved

Justification:
The research project meets the requirements of the professional-ethical criteria of the social research including human subjects within the field of education science. Main goal of the study is (a) to explore perceptions of teacher trainers of the concept of lifelong learning, and (b) to examine the influence of lifelong learning of teacher trainers on their new learning community. The participants will be teacher trainees (N = 300), ages between 23-60 years in Myanmar. Method of data collection will be an online survey which also contains an informed consent form. Distribution of the survey will be by email, messenger and viber. Procedure of the data collection does not harm their privacy law, it does not have an impact on the participants' mental or physical health. Data cannot be handled by persons to whom they are not concerned.

In a summary, full ethical approval has been granted.

We wish you all the best for the conduct of the project.

Prof. Dr. Bettina Pikó
IRB coordinator

APPENDIX F. THE ETHICAL APPROVAL FOR SEMI-INTERVIEW QUESTIONS

University of Szeged

Institutional Review Board
Doctoral School of Education

6722 Szeged, 30-34 Petőfi S. Av., Hungary
Phone/fax: +36 62 544-032

Win Phyu Thwe
PhD Student: Doctoral School of Education
Reference number: 5/2023
Subject: Ethical evaluation of a research project

Date: 22 March, 2023

ETHICAL APPROVAL

The Insitutional Review Board (IRB) of the Doctoral School of Education, University of Szeged has recently reviewed your application for an ethical approval (Title of the Research Project: " *Implementing the Lifelong Learning Competencies for the Teacher Trainers in the new Learning Community*"), supervisor: Dr. habil. Anikó Kálmán). This proposal is deemed to meet the requirements of the ethical conducts on social research with human subjects of the Doctoral School of Education, University of Szeged.

IRB decision: approved

Justification:

The research project meets the requirements of the professional-ethical criteria of the social research including human subjects within the field of education science. The study aims to explore perceptions of teacher trainers of the concept of lifelong learning, and to examine the influence of lifelong learning competencies of teacher trainers on their new learning community. Participants of this study will be teacher trainers (N = 20, aged 23-60 years, geographical area: Myanmar). Semi-structures interview will be applied as a method of data collection, online mode. Participation is voluntary and anonymous. Participants' informed consent will be obtained. The interviews will also be recorded in audio format upon the participants' agreement and permission. Procedure of the data collection does not harm their privacy law, it does not have an impact on the participants' mental or physical health. Data cannot be handled by persons to whom they are not concerned.

In a summary, full ethical approval has been granted.

We wish you all the best for the conduct of the project.

Prof. Dr. Bettina Pikó
IRB coordinator

AUTHOR'S PUBLICATIONS

Publications in Journals

Thwe, W. P., & Kálmán, A. (2022). Continuous Professional Development of Teacher Trainers in Myanmar During the Pandemic. In K.-P. R, M. J, & P. M (Eds.), *Tanuló társadalom : Oktatáskutatás járvány idején*. Bp, Debrecen: Debreceni Egyetemi Kiadó, Hungarian Educational Research Association (HERA), pp 784-793 (2022) (HERA Évkönyvek 2064-6755 ; 9.).

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XIX. Pedagógiai Értékelési Konferencia = 19th Conference on Educational Assessment: PÉK 2023 = CEA 2023: program és összefoglalók = program and abstracts
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