

**Using Thinking Maps to Develop EFL  
Student Teachers' Instructional Skills and  
Reflective Thinking**

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## Using Thinking Maps to Develop EFL Student Teachers' Instructional Skills and Reflective Thinking

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### **Abstract**

The Present study aimed at developing EFL third year student teachers' instructional skills and reflective thinking through the use of Thinking Maps. Participants of the study were randomly selected (N=40) from EFL third year student teachers' enrolled in Faculty of Education, Fayoum University. The researcher prepared an instructional skills observation sheet, a reflective thinking scale and a thinking map-based manual . Having pre administered the study instruments, the study group was taught using Thinking Maps. The same instruments were post administered at the end of the treatment. The results showed that Thinking Maps were effective in developing student teachers' instructional skills and reflective thinking. The study concluded with some recommendations and suggestions for the students and faculty members. Also, suggestions for further research were provided.

**Keywords:** Thinking Maps, instructional skills, reflective thinking, student teachers

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**إستخدام خرائط التفكير لتنمية المهارات التدريسية والتفكير التأملى  
لدى الطلاب المعلمين شعبة اللغة الإنجليزية**

د. / مروة مراد صالح

**المستخلص العربي:**

هدفت الدراسة الحالية إلى تنمية المهارات التدريسية والتفكير التأملى لدى الطلاب المعلمين شعبة اللغة الإنجليزية باستخدام خرائط التفكير ، وتكونت عينة الدراسة من (٤٠) طالباً تم اختيارهم عشوائياً من طلاب الفرقة الثالثة بكلية التربية جامعة الفيوم .وقامت الباحثة بإعداد اختبار معرفى لقياس الجانب المعرفى للمهارات التدريسية و بطاقة ملاحظة للمهارات التدريسية .كما قامت بإعداد مقياس للتفكير التأملى ، وكذلك قامت بإعداد دليل للمعلم قائم على خرائط التفكير . وبعد تطبيق أدوات الدراسة قبلياً تم التدريس لعينة الدراسة باستخدام خرائط التفكير، ثم تم تطبيق الادوات بعدياً. ولقد كشفت الدراسة عن فعالية خرائط التفكير فى تنمية المهارات التدريسية ، والتفكير التأملى لدى عينة الدراسة. واختتمت الباحثة الدراسة بتقديم مجموعة من التوصيات التى تفيد الطلاب المعلمين، وأعضاء هيئة التدريس بالكلية هذا بالإضافة إلى اقتراح بعض الدراسات والبحوث المستقبلية.

**الكلمات المفتاحية:**

خرائط التفكير - المهارات التدريسية - التفكير التأملى - الطلاب المعلمين

## **Introduction**

Instruction is an art that requires employing a large number of skills. Although it is important for the teacher to be well versed in his subject area, he / she should be able to communicate necessary skills and concepts in a way students can understand. Using various instructional skills to convey units of knowledge to his students can make him a competent teacher. Effective development of instructional skills should target the pre-service as well as in service teachers (Farswan, 2019).

Reflective thinking is a process that facilitates teaching and learning. It is an essential characteristic of efficient teachers. It plays a central role in teachers' professional development. It helps them to think back on finished work, analyze their thoughts and products . Also, it helps them assess their points of strength and weakness, make decisions about their work and formulate their own conclusions rather than depending on judgments of others. By constantly looking into their own actions and experiences, they professionally grow in their own (Murphy, 2014).

Thinking Maps are a set of maps based on cognitive skills that support the brain's natural tendency to detect patterns. They support the brain in making patterns from content specific information by displaying such information in visual-spatial-verbal patterns. They make learning meaningful because they give students ownership of their thinking processes and learning. In addition, these maps provide students with thinking tools that they can carry across curriculum, in any subject at all grade levels (Alikhan, 2014).

## **Context of the problem**

Being a supervisor on third year student teachers during their teaching practice at different schools, the

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researcher noticed that most of them have weak instructional and reflective thinking skills. Some related studies e.g. Naghdipour and Emeagwali (2013), Tican and Taspinar (2015) and Tas and Karabay (2016) affirmed such weakness.

Naghdipour and Emeagwali (2013) observed that undergraduate university students lack experience with reflective thinking. They have poor reflective thinking skills because of some factors such as shyness or fear of embarrassment, being afraid of making mistakes in front of others and viewing their teacher as an authority. Tican and Taspinar (2015) assured that pre-service teachers need to receive training in reflective thinking skills.

Tas and Karabay (2016) showed that pre- service teachers have problems with management and teaching management skills. Also , they have problems in transferring their theoretical knowledge to the real classroom environment during the learning – teaching process. They need more assistance on lesson planning, materials selection as well as teaching and assessment methods. The acquired instructional skills appeared to focus on basic applications rather than on the more complex situations.

In addition, she conducted a pilot study where an instructional skills observation sheet was used to observe (10) student teachers in their teaching performance. Also, a reflective thinking scale was administered to the same students to measure their reflective thinking skills. The results of the pilot study revealed that the majority (80%) have poor instructional skills and reflective thinking.

### **Statement of the problem**

The problem of the present study lies in the weakness of EFL student teachers at Faculty of Education in

instructional skills and reflective thinking. Most of them are not good in instructional skills or reflective thinkers.

### **Aim of the study**

The present study aims to develop EFL student teachers' instructional skills and reflective thinking using TMs.

### **Questions of the study**

The main question could be stated as follows:

What is the effectiveness of using TMs in developing EFL student teachers' instructional skills and reflective thinking?

This main question can be divided into the following sub-questions:

1. What is the effectiveness of using TMs in developing EFL student teachers' cognitive component of instructional skills?
2. What is the effectiveness of using TMs in developing EFL student teachers' overall instructional skills?
3. What is the effectiveness of using TMs in developing EFL student teachers' each instructional skill?
4. What is the effectiveness of using TMs in developing EFL student teachers' each reflective thinking?

### **Hypotheses of the study**

To achieve the aim of the study, the following hypotheses were formulated:

1. There is a statistically significant difference between the study group's mean scores in the pre/post administrations of cognitive component test of instructional skills in favor of the post administration.
2. There is a statistically significant difference between the study group's mean scores in the pre/post applications of observation sheet in overall instructional skills in favor of the post application.
3. There is a statistically significant difference between the study group's mean scores in the pre/post applications of

observation sheet in each instructional skill in favor of the post application.

4. There is a statistically significant difference between the study group's mean scores in the pre/post administrations of each reflective thinking skill scale in favor of the post administration.

### **Significance of the study**

The present study might help:

1. develop third year student teachers' instructional skills and reflective thinking.
2. direct student teachers' attention to the use of TMs in EFL teaching and learning.
3. open new avenues to researchers in EFL teaching and learning.

### **Delimitations of the study**

The present study is delimited to:

- Some TMs: bubble map, trace map, flow map, tree map and circle map.
- Some instructional skills including planning and presentation, classroom management and discipline, monitoring and following up students' progress and professional development.
- Some reflective thinking skills including observation, communication, judgment, decision taking and team work.
- The first semester of the academic year 2019-2020.

### **Definition of terms**

#### **Thinking Maps (TMs)**

The researcher defined TMs as a set of maps including bubble map, brace map, flow map, tree map and circle map that EFL student teachers at Faculty of Education Fayoum University use and practice to develop their instructional skills.



### **Instructional skills**

The researcher defined instructional skills as a set of acts and behaviors that student teachers use to enhance them proficiently.

### **Reflective thinking**

The researcher defined reflective thinking skills as EFL student teachers' ability to make judgment about what has happened during their teaching practices in EFL classes.

### **Student teachers**

They are a group of third year EFL student teachers (N=40) enrolled in third year of Basic Education at Faculty of Education, Fayoum University.

### **Review of literature**

#### **Thinking Maps**

Thinking Maps (TMs) are a set of eight maps, developed by David Hyerle, used in the educational field to provide a visual language to information structure as well as visual representations of thinking skills (Alikhan, 2014). According to Islami (2018), TMs are a synthesis of three types of visual tools brainstorming webs, graphic organizers, and thinking process tools. Each map is graphically consistent and based on a fundamental thinking process . They all encourage learners to recall information through visualization.

#### **Importance of TMs**

Using TMs in language classrooms is a powerful tool to promote reading comprehension, writing process, problem solving and thinking skills (Winfield, 2012). TMs can be introduced to students as tools for content – specific learning and for interdisciplinary investigations (Hyerle, 2012). They define cognitive skills, drive learning dynamic, sustain students by enabling them to move from concrete to abstract concepts, think with depth , and apply their

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thinking to complex tasks. In addition, they serve as tools of formative and summative assessment gauging students' progress (Alikhan, 2014).

Al-naqa and Abu-Owada (2014) pointed out that TMs help learners draw a total picture to the parts of the detailed subject and review any subject when they do not find enough time for a detailed review. They also help them remember information contained in the subject through remembering shapes that are drawn in their minds. In addition, Woodford (2015) stated that TMs should be used as language of instruction, organization of ideas, and a platform for storing thoughts and ideas. As students and teachers talk about content, the language of thinking is used.

He added that students identify their visual map by the thought process associated with the map. Using maps helps learners to be less anxious and confused about class work, which in turn, gives them a sense of control over their learning. They motivate students to participate in classroom activities, increase their learning, and give them more success with academic tasks.

TMs provide students with the skills to be successful thinkers, problem solvers and decision makers. They are based on eight skills or cognitive processes that involve students in critical thinking. The cognitive processes that work together enable students to think at the higher level of Bloom's taxonomy (Omar & Al.Bakri, 2016).

### **Qualities of TMs**

Hyerle (2004) identified five major qualities of TMs: consistency, flexibility, developmental, integrative, and reflective. Each map has a consistent representation that visually reflects the cognitive skill used. This visual representation never changes. All maps can grow and be flexible in form to be configured in different ways to allow

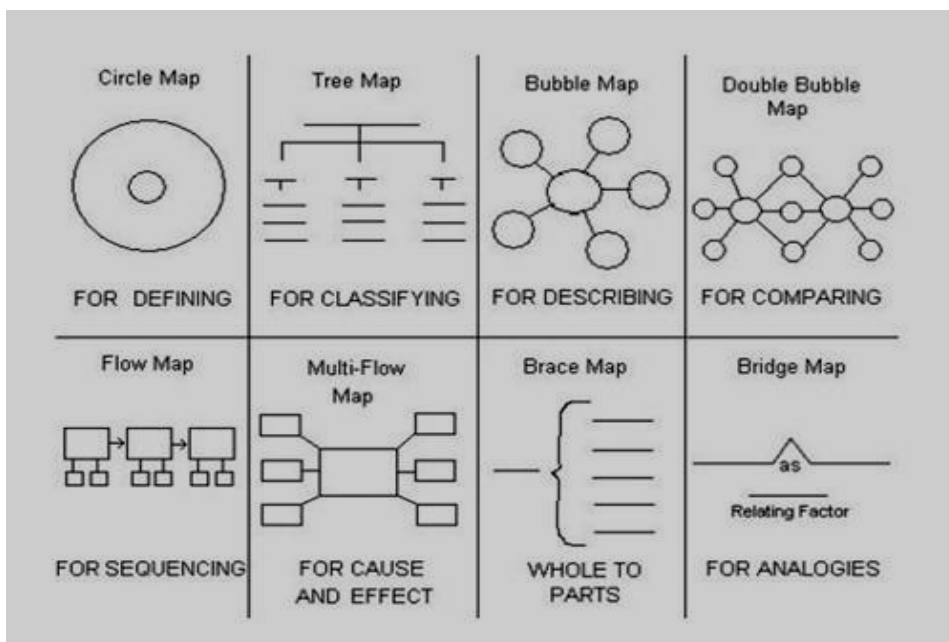
the learner to demonstrate their ideas. The learner and the content of learning determine how the maps develop. All maps can be used together as well as be used within and across content areas. TMs are reflective of a student's thinking process and enable teachers to reflect upon and assess the content and students' thinking skills.

### **TMs and graphic organizers**

Alikhan (2014) stated the similarities and differences between TMs and graphic organizers. The similarities between TMs and general graphic organizers are that they are both visual tools for teaching and assessment. Also, they are successful due to their basis of concrete patterns. On the other hand, there are several significant differences between the TMs and general graphic organizers. Isolated tasks and defined structures form the basis of graphic organizers while fundamental thinking skills and flexible structures form the basis of TMs. Moreover, graphic organizers are difficult to transfer from one subject to the other and are mostly teacher- oriented whereas TMs easily transfer across subjects and are students- oriented.

### **Types of TMs**

Hyerle (2012) and Alikhan (2014) pointed out that TMs include eight cognitive processes: Circle Map, Tree map, Bubble Map, Double Bubble, Flow Map, Multi- Flow Map, Brace Map and Bridge Map. The following section deals with these map.



**Source: Hyerle (2012). A common visual language for learning.**

1. Circle map is used for brainstorming, vocabulary development , accessing prior knowledge and reviewing after lessons. It is used to generate relevant information about a topic.
2. Tree map enables students to do both inductive and deductive classification. Students learn to create general concepts, (main) ideas, or categories headings at the top of the tree, and supporting ideas and specific details in the branches below.
3. Bubble Map is used for describing thinking process. Learners can write words inside the circles or draw pictures based on their developmental age.
4. The Double Bubble Map is used for comparing and contrasting two things , such as characters, historical figures, systems. It is also used for prioritizing which information is most important within a comparison.

5. Flow Map is used to show sequences, orders, timelines, cycles, actions, steps, and directions. Students' attention is paid to seeing the relationships between stages and sub stages of events. It highlights the sequencing thinking process.
6. Multi- Flow Map is used for seeking causes of events and the effects. The map expands when showing historical causes and for predicting future events and outcomes. It highlights analyzing cause and effect thinking process.
7. Brace Map is used for identifying the part-whole relationships of an object. It supports students' spatial reasoning and their understanding of physical boundaries.
8. Bridge Maps highlight the "seeing analogies" thinking process. It is used for identifying similarities between relationships and creating analogies"

Namen, Snow and Powers (2017) stated that these maps show individual components of an idea, as well as their relationship to other ideas and concepts. They help learners organize, understand, and communicate information in a more accurate and efficient way . However, learning to organize such mental maps is not automatic. Students need the teacher's help and visual outlines to help them see how pieces of information connect to form a cohesive concept .

### **Reflective thinking**

Dewey (1933) as cited in Porntaweekul, Raksasatay and Nethanomsak, 2015) defined reflective thinking as an active, persistent consideration of a belief or suggested form of knowledge, of the grounds that support that knowledge, and the further conclusions to which that knowledge leads. It is part of the critical thinking process.

Schon (1983) as cited in Afshae and Hamzavi, (2014) developed this concept through introducing two terms: reflection – in – action and reflection – on – action. "Reflection in action" refers to the ability to change course in the middle of one's teaching because more or less than what is planned is needed. Teachers could sometimes meet a surprise which triggers their attempt to consider alternatives immediately and makes necessary changes .

On the other hand, the reflection on action happens after the teaching when the teacher identifies critical moments about what went well and what needs refining. This stage prompts "reflection for action" when a teacher analyzes instruction, and plans to refine the previous lesson during the next class

### **Reflective thinking skills**

Observation, communication, judgment, decision making and team working are applied as reflective thinking skills (Dymoke & Harrison, 2008). Observation is a tool through which teachers' feelings and behaviors are recorded. Also it engages the user in noticing, marking and recording the distinguished issues. Communication tools of reflective practice are varied. Personal learning journals or diaries and formal professional portfolio are valuable communication tools.

To make valid Judgments, teachers need to be clear about the details and components of classrooms, events and situations while analyzing. Teachers' analysis should be impartial when they are involved in the events and situations. Decision making is taking action to gain a particular purpose. In decision making factors like teachers' understanding of their students and classroom events are important. Teachers may be involved in subject/ curriculum teams. (Mizaei, Phara & Kashefi , 2013)

### **Reflective teaching characteristics**

Reflective teaching is regarded as an essential characteristic of efficient teachers, a major element of teacher training programs and one of the factors which mainly influences teaching practice (Afshar & Farahani, 2014). So, many institutions in the field of education and teacher development in Europe and America have determined reflection as a standard that needs to be complied with by both teachers and students.

Such as standard is expressed as; teachers must contemplate on their practices in a systematic manner and must benefit from their previous experiences. They should be able to examine their practice from a critical perspective, concretize their judgments, adapt the method of teaching according to new findings and thoughts and consult the views of others to deepen their knowledge (Sahin & Ovez, 2012).

Novice teachers have an urgent need for reflective thinking. To be effective teachers novice teachers should determine the purpose behind their behaviors. They must be able to explain not only why the content they teach is important but also why the methods they use are appropriate. In addition, they must be able to understand the connections between what was taught yesterday, what is taught today , and what will be taught tomorrow to develop a deeper understanding of their instructional practices (Genç, 2004).

According to Choy and Oo (2012), teacher's reflection can be characterized by: a) reflection as retrospective analysis (Ability to self- assess) that takes reflection as bending thoughts to incorporate prior experiences and how these experiences could affect the teacher's current practices, b) reflection as problem solving that includes taking the necessary steps to identify and analyze problems

that the teacher may have in the classroom before implementing a quick fix to them, c) critical reflection of self (developing continuous self improvement) that includes teacher's ability to ask himself critical questions about his assumptions and actions and d) reflection on beliefs about self that includes the feelings and beliefs that teachers have towards themselves and others. Undoubtedly, These beliefs have great influence in the way they plan and deliver their lessons.

Rodger ( 2002) listed the basic characteristics and behaviors that a reflective thinking teacher needs to have. A teacher who persistently evaluates the teaching process can make effective decisions by reviewing the methods and instruments used, produce alternative solutions and pay attention to reflection. Also, he should be foresighted , open minded and sincere .

In addition, Genç ( 2004) stated that teachers who want to improve their reflective processing may ask themselves the following questions or they could discuss their answers with a mentor or a colleague: Did my practice work? What else can be done? How do I feel about what I am doing? Why do I feel this way? How are my students responding? What information do I need to make an informed decision about this situation? What did I intend to accomplish by the instruction? Did I achieve my goal? What are my strengths as a teacher? What are my students' strengths? Are we working together or at odds?.

### **Reflective thinking techniques**

Genç, (2004) and Akdeniz et al.(2016) mentioned some techniques to foster reflection in student teachers. These include writing tasks (keeping journals), compiling portfolios, Socratic questions, interpersonal process recall and action research. The following section deals with such techniques.



Journal writing has become an essential tool for reflection because they serve as a dialogical teaching tool. Also, it prevents to repeat the same mistakes, serves as a permanent record of thoughts and experiences and provides a means of establishing and maintaining relationship with the teacher.

Compiling portfolios are created by students. They help students to select, examine and reflect on completed projects and review old products. They help students to evaluate their practices, develop their reflective thinking skills and demonstrate their progress. Asking a good question may be better than providing a good answer, which is the basic principle behind Socratic questioning. Good questions can guide and direct the learning process leading students to learn more than what is planned or expected. The Socratic method is a process by which educators use questions to enrich the learning experience.

Interpersonal process recall is an instructional method that depends on using videotaped sessions to help students reflect on a previous session. It helps students to have the opportunity to bring to awareness their internal processes (emotions and attitudes) they were experiencing during the session. This is because students can control in stopping the tape when they recall any thoughts, feelings, impressions and images that occurred during the session.

Action research receives increased attention as a technique for reflective thinking. It helps the teacher get direct feedback from his/her students and could better evaluate what s/he has done in the classes. It gives him/ her the opportunity for a more efficient course planning.

### **TMs and reflective thinking**

So (2016) examined the effect of TMs strategies on developing reflective thinking and scientific attitudes of elementary school students. Participants of the study were

divided into two groups. The experimental group (N=24) studied using TMs as reflective thinking promotion strategies and the control group (N=24) received regular instruction. The results of this study showed that reflective thinking strategy program using TMs has positively influenced the reflective thinking and scientific attitudes of elementary school students.

Namen, Snow and Powers (2017) investigated the effect of using TMs on developing higher order thinking skills among diverse learners. Participants were diverse population of students in the K-12 school setting. Results confirmed that TMs proved to be an effective tool to enhance students' higher order thinking skills while meeting the diverse needs of all learners.

### **Instructional skills**

The term instructional skills is defined by different scholars such as Dhillon (2014) who defines instructional skills as a group of verbal and non-verbal acts and behaviors intended to facilitate and support pupils' learning directly or indirectly. According to Rani (2011) instructional skills refer to all arts and behaviors of the teacher to communicate with students efficiently and to maximize their learning.

Kyriacou (2007) stated five features of instructional skills : 1) there are three essential elements of instructional skills : knowledge, decision making and action, 2) they are purposeful and goal oriented, 3) they are interactive in nature as these skills cannot be displayed in isolation from their interaction with students' behavior, 4) their level of expertise is evidence by the display of precision, smoothness and sensitivity to context and 5) they can be learned and improved by training and practice.

### **Essential instructional skills**

Kyriacou (2007) identified seven essential instructional skills that contribute to successful classroom practice:

- 1- planning and preparation : the skills involved in selecting the educational aims and learning outcomes intended for a lesson and how best to achieve them.
- 2- Lesson presentation: the skills involved in engaging students in the learning experience.
- 3- Classroom management : the skills involved in controlling and organizing the learning activities that happen during the lesson to maintain students' attraction, interest and involvement.
- 4- Classroom climate: the skills involved in establishing and maintaining positive attitude and motivation by students towards the lesson and the teacher.
- 5- Discipline: the skills involved in maintaining good order and dealing with any misbehavior.
- 6- Assessing students' progress: the skills involved in assessing students' progress, covering both formative and summative types of assessment.
- 7- Reflection and evaluation: the skills involved in evaluative one' s own current teaching practice in order to improve future practice.

### **Importance of instructional skills**

Farswan (2019) stated that instructional skills are important because they help the teacher to: 1) create a positive, relaxed, friendly learning environment that inspires students to participate in classroom activities without the fear of making mistakes or being criticized by others, 2) well design and implement his lesson plan, 3) select appropriate activities and teaching strategies, techniques and methods suitable for the lesson and 4) enhance teachers' ongoing professional development.

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Effective development of instructional skills should target the pre-service teachers as they are prospective teachers. Incorporating the development of these skills will not only make the use of these skills practicable but also provide a practical model for actual implementation of these skills in real classroom situations (Papa-Gusho & Biçaku-Çekrezi, 2015).

Onwuagboke, Osuale & Nzeako (2017) stated that pre-service teachers should go through micro teaching cycle to develop their instructional skills. The cycle starts with observing the modeled skill. Then, they have to prepare a lesson plan to practice the modeled skill and then they have to teach the planned lesson observed by a supervisor and their peers. At the end of the teaching, the video recorded lesson is replayed to allow them to observe their teaching performance, and critique themselves and listen to their supervisors and peers criticism. Then, they will repeat the same cycle from re-planning, re-teaching to re-observing and re-critiquing.

Kumar & Kaur (2012) pointed out that teachers should have and polish their soft skills in which appearance, facial expression, eye contact, posture, gesture, movements, and behavior play a vital role in conveying new information. These paralinguistic features highly contribute to teacher effectiveness. Also, Coe, Aloisi, Higgins & Major (2014) stated that teachers should develop the following instructional skills: pedagogical content knowledge (strong evidence on impact on students' outcomes), quality of instruction (strong evidence on impact on students' outcomes), and class climate (moderate evidence on impact on students' outcomes). They added that instructional skills include classroom management (moderate evidence on impact on students' outcomes), teacher beliefs (some evidence of impact on students' out

comes) and professional behaviors (some evidence of impact on students' outcomes).

### **TMs and instructional skills**

Developing instructional skills depends on teacher's motivation. In- service teachers vary in the extent to which they are prepared to invest time , energy and effort to reflect upon, evaluate and improve their instructional skills (Dhillon, 2014). Behaviors exhibited by teachers such as reflecting on and developing professional practice, participation in professional development, supporting colleagues and communicating with parents help them to sharpen their instructional skills (Coe et.al , 2014).

Bataineh and Alqatani (2017) examined the effectiveness of TMs instruction in improving Jordanian EFL learners creative reading skills. Participants were 57 students drawn from a public school in Zarqa, Jordan. They were randomly assigned into an experimental group of (28) students, taught through TMs, and a control group of (29) students, taught per the guidelines of the prescribed Teacher's Book. Results revealed not only significant differences in the students' creative reading skills, in favor of the experimental group, but also general favorable opinions about the effectiveness of the treatment.

Cooks & Sunseri (2014) examined the efficacy of TMs on English language learners' writing skills. Participants were 8 students in grades 3 through 5 in the South Bay School District. Results indicated that TMs have a positive impact on learners' writing skills.

### **Method**

#### **A. Participants**

The participants of the current study were EFL third year student teachers (N =40) enrolled in the Faculty of Education, Fayoum University, Egypt.

## **B. Design**

The researcher used the quasi experimental with one group pre/post test design.

## **C. Instruments**

To fulfill the aim of the current study, the following instruments were designed: an EFL instructional skills cognitive test, an instructional skills observation sheet, a reflective thinking scale and a TMs-based manual.

### **1- EFL instructional skills cognitive pre-post test**

**1.1- The aim of EFL instructional skills cognitive pre-post test** The aim of this test was to measure the study group's cognitive level in instructional skills before intervention. It was used as a pre- post test . As a pre test, it aimed at determining the study group's current cognitive level in instructional skills. As a post test, it aimed at investigating the effectiveness of TMs in developing the study group's cognitive level in instructional skills.

### **1.2- Description of the test**

EFL instructional skills cognitive pre-post test consisted of two parts described as follows:

- In part one, students were asked to complete some sentences.
- In part two, students were asked to answer some Wh questions (see appendix 1).

### **1.3- Validity of the test**

EFL research skills (cognitive component) test was administered to a panel of EFL specialists (N=5) (see appendix 2). They were asked to judge test validity in terms of clarity and suitability for the students' level. Valuable remarks were provided and taken into consideration ( Face Validity). The test was developed in the light of an organized and accurate review of the items to establish content validity. So, the content of the test was

representative of the skills that were intended to be measured. Thus , the test was valid.

#### **1.4- Reliability of the test**

The test reliability was measured by using the test – retest method. The test was administered to ( 15) EFL student teachers enrolled in Faculty of Education, Fayoum University, other than those who participated in the intervention. Then, it was post administered to the same group after two weeks . The calculated Pearson correlation between the two administrations was (0 .80) at the 0.01 level reflecting that the test was reliable.

#### **1.5- Piloting and scoring the test**

The test was piloted on (15) students other than those of the main treatment. To estimate the time of the test , the researcher recorded the time taken by each student. Then, the following formula was used:

$T1+T2/2$ . So, the time of the test was 60 minutes.

### **2- The instructional skills observation sheet**

#### **2.1- The aim of instructional skills observation sheet**

The aim of the instructional skills observation sheet was to assess the required instructional skills of EFL student teachers enrolled in third year of Basic Education at Faculty of Education, Fayoum University.

#### **2.2- Description of the observation sheet**

The observation sheet consists of four main instructional skills and their sub skills: lesson planning and presentation (including 9 sub skills), classroom management and discipline (including 7 sub skills), monitoring and following up student's progress (including 3 sub skills)and professional development (including 3 sub skills).The total number of sub skills are 22 (see appendix 3).

### **2.3- Validity of the observation sheet**

The observation sheet was submitted to a panel of jury members (see appendix 3). They were submitted to determine its validity. After receiving the jury comments, the required modifications of the observation sheet were made.

### **2.4- Reliability of the observation sheet**

The reliability of the observation sheet was obtained by Cooper equation to calculate the degree of agreement between the panel of jurors. The results were as follows : 92% for lesson planning and presentation skills, 89% for classroom management and discipline skills, 90% for monitoring and following up student's progress and 92% for professional development skills.

### **2.5-Scoring the observation sheet**

The observation sheet included a scoring scale that contained three levels that indicate student teachers' level on the four main skills namely( Excellent =2 , Good =1 and Poor = 0). Two was for the highest level while zero was for the lowest level. The total mark was 44.

## **3- The reflective thinking scale**

### **3.1- The aim of the reflective thinking scale**

The aim of the reflective thinking scale was to measure the study group's reflective thinking skills. It was administered before and after the treatment.

### **3.2- Description of the reflective thinking scale**

The reflective thinking scale consists of five reflective thinking skills and their sub skills: observation (including 5 sub skills), communication (including 5 sub skills), judgment (including 6 sub skills), decision taking (including 6 sub skills) and team work (including 4 sub skills). The total number of sub skills are 22. (see appendix 4). Students were asked to tick (√) in the suitable place which best matches the frequency of each skill on a 3-point



Likert-scale, ranging from Never (0), Sometimes (1), to Always (2) (see appendix 4).

### **3.3- Validity of the reflective thinking scale**

The reflective thinking scale was administered to a panel of jury members. They were asked to determine the validity of the scale in terms of clarity and suitability for the students' level. They indicated that the reflective thinking scale is valid after making the required modifications.

### **3.4- Reliability of the reflective thinking scale**

The reflective thinking scale was measured by using the test – retest method. It was administered to (40) EFL third year student teachers enrolled in Faculty of Education, Fayoum University, Egypt. Then, it was administered one more time to the same group after two weeks. The calculated Pearson correlation between the two administrations was (0 .80) at the 0.01 level reflecting that the scale was reliable.

## **4- A Thinking maps -based manual**

### **4.I- Aim and objectives of the manual**

The manual aimed to develop the study group's instructional skills and reflective thinking using TMs (see appendix 5).

#### **Objectives**

By the end of the sessions, student teachers would be able to:

- design SMART behavioral objectives.
- design attractive teaching aids.
- use appropriate teaching methods.
- present the lesson effectively.
- create a positive learning environment.
- create a supportive classroom climate
- ask good questions to assess students' comprehension .
- present activities using TMs.

- write a journal to record comments and reflections on their performance.
- watch a recorded video on their teaching practices to reflect on and judge their performance.
- suggest new ideas to improve their current practices.

#### **4.2-Content**

The researcher started with explaining TMs' definition, importance and usage to student teachers. Then, she designed some lessons about the theoretical part of instructional skills and reflective thinking to be explained using different types of TMs such as circle map, bubble map, tree map, brace map and flow map. To apply these skills, student teachers were encouraged to explain primary school students' lessons using TMs. At the end of each teaching period, students teachers were asked to reflect on their teaching practices that were video recorded listening to their peers' and the researcher's comments and feedback . The sessions were shown in the following table:

**Table (1) Sessions of the TMs-based manual**

<b>Session</b>	<b>Title</b>	<b>Map</b>
1	Pre testing	
2	An introductory session	
3	Lesson planning	Flow map
4	Lesson presentation	Tree map
5	Classroom management and discipline	Bubble map
6	Monitoring and following up students' progress	Circle map
7	Professional development	Brace map
8	Post testing	

#### **4.3-Activities and techniques**

The researcher used many individual, pair and group work activities throughout the treatment using various TMs. Student teachers were encouraged to plan new lessons individually, in pairs or in groups making TMs to be taught

at schools. At the end of each teaching period, student teachers were encouraged to reflect on their teaching practices individually through watching the recorded videos of their lessons and writing their own journals. Also, they were encouraged to work in pairs or groups to reflect on their teaching practices identifying their own points of strength and weakness focusing on improving their weaknesses.

#### **4.4-Evaluation**

The researcher used the two types of evaluation: formative and summative evaluation. The formative evaluation was represented through observing students' instructional skills and reflective thinking throughout the teaching periods providing them with the appropriate feedback. The summative evaluation was represented in the post administration of the observation sheet at the last session and reflective thinking scale to the student teachers at the end of the treatment.

### **Experimental procedures**

#### **1-Pre-testing**

The pre-testing took place on 4th October 2019. This was done to identify the study group's entry level before the treatment.

#### **2- Treatment**

Teaching sessions were based on the use of TMs. There were 8 sessions devoted to enhance the study group's instructional skills and reflective thinking. They took place on 5<sup>th</sup> October 2019 and ended on 15<sup>th</sup> December 2019. In the first session, the researcher introduced the TMs, instructional skills and reflective thinking to the students explaining what they are going to do.

#### **3- Post-testing**

At the end of the treatment, the researcher administrated the study instruments with the aim of

investigating the effectiveness of TMs in developing study group's instructional skills and reflective thinking.

### **Findings of the study**

Data were treated statistically and the results and discussion will be dealt with in the this section.

The findings of the present study are presented in the light of the hypotheses using the statistical package for social sciences (SPSS) version 22.

Table (2)" t" value of the study group in the pre and post administrations of the instructional skills cognitive test.

<b>Study group</b>	<b>N</b>	<b>M</b>	<b>S.D</b>	<b>T-Value</b>	<b>D.F</b>	<b>Sig.</b>
Pre	40	14.67	2.86	8.153	39	0.01
Post	40	18.71	2.97			

To verify the first hypothesis "There is a statistically significant difference between the study group's mean scores in pre/post administrations of instructional skills cognitive test in favor of the post administration ", t-test was administered. Results confirmed that the t- value of instructional skills cognitive test is (8.153) that is significant at 0.01 level in favor of the post administration. Thus, the first hypothesis of the study was supported.

Table (3)" t" value of the study group in the pre and post applications of the instructional skills observation sheet in instructional skills.

<b>Instructional Skills</b>	<b>Group</b>	<b>N</b>	<b>M</b>	<b>S.D</b>	<b>T-Value</b>	<b>D.F</b>	<b>Sig.</b>
Lesson planning and presentation	pre	40	10.70	1.96	5.152	39	0.01
	Post	40	13.84	0.77			
Classroom management and discipline	Pre	40	4.56	1.73	10.057	39	0.01
	Post	40	7.94	0.80			
Monitoring and following up student's progress	Pre	40	4.72	3.40	7.284	39	0.01
	Post	40	9.19	0.68			
Professional development	Pre	40	5.66	1.17	7.023	39	0.01
	Post	40	7.67	1.10			
Overall instructional skills	Pre	40	35.35	3.18	18.078	39	0.01
	Post	40	48.92	2.84			

To verify the second hypothesis: "There is a statistically significant difference between the study group's mean scores in pre/post applications of overall instructional skills observation sheet in favor of the post application", t-test was administered. Results confirmed that the t- value of overall instructional skills is (18.078) that is significant at 0.01 level in favor of the post application. Thus, the second hypothesis of the study was supported.

To verify the third hypothesis: "There is a statistically significant difference between the study group's mean scores in pre/post applications of each instructional skills observation sheet in favor of the post application", t-test was administered. Results confirmed that the t- value of lesson planning and presentation skills is (5.152) that is significant at 0.01 level in favor of the post application. Also, the t- value of classroom management and discipline skills is (10.057) that is significant at 0.01 level in favor of the post application. In addition, the t- value of monitoring and following up student's progress skills is (7.284) that is significant at 0.01 level in favor of the post application. Moreover, the t- value of professional development skills is (7.023) that is significant at 0.01 level in favor of the post application. Thus, the third hypothesis of the study was supported.

Table (4) " t" value of the study group in the pre and post administrations of the reflective thinking scale .

Reflective thinking Skills	Group	N	M	S.D	T-Value	D.F	Sig.
Observation	pre	40	8.33	0.99	49.208	39	0.01
	post	40	19.70	0.98			
Communication	pre	40	8.36	1.06	29.158	39	0.01
	post	40	18.00	1.509			
Judgment	pre	40	3.30	0.46	19.010	39	0.01
	post	40	6.90	1.21			
Decision taking	pre	40	3.47	0.508	29.085	39	0.01
	post	40	8.23	0.817			

## Using Thinking Maps to Develop EFL Student Teachers' Instructional Skills and Reflective Thinking

Reflective thinking Skills	Group	N	M	S.D	T-Value	D.F	Sig.
Team work	Pre	40	3.00	0.00	14.880	39	0.01
	post	40	5.80	1.031			
Overall reflective thinking skills	pre	26.44	2.30	3.18	36.291	39	0.01
	post	58.10	4.83	2.84			

To verify the fourth hypothesis: "There is a statistically significant difference between the study group's mean scores in pre/post administrations of each reflective thinking skill in favor of the post administration", t-test was administered. Results confirmed that the t- value of observation skill is (49.208) that is significant at 0.01 level in favor of the post administration. Also, the t- value of communication skill is (29.158) that is significant at 0.01 level in favor of the post application. In addition, the t- value of judgment skill is (19.010) that is significant at 0.01 level in favor of the post application.

Moreover , the t- value of decision taking skill is (29.085) that is significant at 0.01 level in favor of the post application. Finally, the t- value of team work skill is (14.880) that is significant at 0.01 level in favor of the post application. Finally, results confirmed that the t- value of overall reflective thinking skills is (36.291) that is significant at 0.01 level in favor of the post administration. Thus, the fourth hypothesis of the study was supported.

### Discussion of the Results

The aim of the present study was to develop EFL student teachers' instructional skills and reflective thinking through using TMs. The study results assured that the TMs improved the study group's overall instructional skills and reflective thinking.

The researcher attributed this improvement in instructional skills to the fact that TMs helped student teachers to explain and assess new lessons, ideas and thoughts visually. Also, the various maps helped the student

teacher to select the suitable one for his lesson allowing him to use different visual tools based on the nature of his lesson or existent thinking skills.

Using visual maps helped student teachers' to teach effectively making use of the various maps. Thus, TMs facilitate teaching and learning process. They enjoyed drawing maps and filling in them individually, in pairs and in groups. Also, they show enthusiasm to use these maps in studying other subjects.

Furthermore, TMs helped student teachers to reflect on their teaching practices developing their reflective thinking skills. At the end of each teaching period, student teachers were encouraged to ask themselves the following questions: was this map the best one to explain the lesson content? How it can be developed? Can I use other maps to explain the content? Did the used map help me to achieve my goal? And what else can be done? Moreover, listening to the researcher's and peers' criticism, writing journals about class events and problems and watching video recorded lessons help student teachers to make good use of TMs developing their teaching practices as well as their reflective thinking skills.

Some of students' comments were the following:

- *"TMs helped me to explain and assess my teaching points in a visual and attractive way."*;
- *"TMs encouraged students to participate in classroom activities"and*
- *"Dr. Marwa's comments helped me to identify and strengthen my weaknesses"*.

The results of the study revealed that TMs proved to have a high effect on developing EFL student teachers' instructional skills and reflective thinking. These results are in line with the findings of So (2016) and Namen, Snow and Powers (2017) that concluded that TMs significantly

enhanced the students' reflective and higher order thinking skills .

### **Conclusion**

The results of the study revealed a noticeable development in study groups' instructional skills and reflective thinking due to the implementation of the TMs. It was concluded that the use of TMs was effective in developing general third year student teachers' instructional skills and reflective thinking.

### **Recommendations of the study**

In the light of previous results, the following recommendations could be presented:

- 1- The use of visual tools (TMs) should be highly emphasized in all subject areas and levels .
- 2- EFL teachers should use TMs for developing productive language skills.
- 3- The use of reflective thinking techniques among student teachers should be encouraged .
- 4-Inserting instructional skills observation sheet within EFL student teachers' practicum evaluation instruments.

### **Suggestions for further research**

Based on the findings of the current study the following suggestions are presented:

- 1- Replicating the same study with in-service teachers taking into consideration their qualifications and experiences.
- 2- Investigating the effect of TMs on improving productive language skills : speaking and writing.
- 3- The effect of using TMs on enhancing learners' creative instructional skills.
- 4- Using TMs to develop college students' critical thinking skills



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