

FACTORS CONTRIBUTING TO THE CONSTRUCTION OF EFL TEACHERS' PROFESSIONAL IDENTITY: A CASE STUDY OF EFL INITIAL TEACHERS AT UNRWA UNIVERSITY IN JORDAN

KHALDOON MOHAMMAD TAISIR KHAMAISEH*

Faculty of Languages and Communication, Universiti Sultan Zainal Abidin, Malaysia. Corresponding Author

RADZUWAN AB. RASHID

Faculty of Languages and Communication, Universiti Sultan Zainal Abidin, Malaysia. Applied Science Research Centre, Applied Science Private University, Amman Jordan.

Abstract

Constructing a teacher's identity is a complex and dynamic process in which teachers experience struggles and changes because of various factors and forces in their professional life. This study explores the factors influencing EFL teachers' professional identity construction at UNRWA University in Jordan. To achieve this aim, a qualitative case study was conducted. Data gathered through collective classroom observation and in-depth semi-structured interviews with six Palestinian and Jordanian FESA teachers were then analysed and discussed. The findings revealed that the construction of EFL teachers' identity is a complex process of various interacting factors that range from the most influentially socio-educational determining factors to self-making and personal internalising modifying factors. The findings of this research are expected to be undertaken as pedagogically recommended counsel for enhancing the educational process and EFL teachers' professionalism.

Keywords: EFL teacher professional identity construction, UNRWA University

INTRODUCTION

Professional identity can be viewed as dynamic and changeable since the identification with a particular group does not happen immediately (Caza & Creary, S, 2016). In addition, personal identity evolves gradually over time due to many experiences and responses that allow individuals to look inwards into their endless choices, values, talents, and preferences (Schein, 1978).

Constructing a teacher's identity is the cornerstone of a reading teacher's professional setup. This process results from teacher interaction and involvement with the teaching context around him/her, including the teacher's experience and contact with the changing world around him.

A teacher's identity is a composite of internal personal knowledge and external professional experience, competing forces of inward and outward elements that construct the teaching profession. The teaching profession and, in turn, the teacher's identity is a negotiating construct that yields to overcome the contextual and cultural paradigms that define teaching (Zare-ee & Ghasedi, 2014; Harré & Van Langenhove, 1999; Lamote & Engels, 2010; Trent, 2013; Bloomfield, 2010).





Over the last decades, teacher's identity in language teaching institutions has been the subject of much scholarly inquiry, and teacher's identity has evolved into a significant area of research since the early 1990s for being viewed as a crucial factor that determines the trajectory of the teacher's professional outcome (Hogg, 2006).

Improvement of education quality has become one of the most critical challenges in the world, which is characterised by economic, technological, educational, political, and social changes. Universities and other educational and learning institutions have become the focus of social and human development. At the core of this trajectory, the university teacher is looked at as the goal and end of the university and the basis of its progress. A teacher's identity and how it is built and constructed is considered a paramount criterion of its quality. The university needs to have a clear vision of the teacher's concept and professional identity (Selvi & Rudolph, 2017), his position, roles, and responsibilities.

A teacher's professional identity is an intertwined, overlapping, and interlinked territory that defies clear-cut definitions and simplified reasoning. It is located within a contrapuntal experience of inward motivational forces, competencies, and outward interactional events and influences. Research in this field has revealed that EFL teachers' professional identity is a result of various interlocutory factors such as beliefs, community of practice, practicum, knowledge, family, past teachers and work environment (Day, Kington, Stobart & Sammons, 2006; Beauchamp & Thomas, 2009; Lamote & Engels, 2010).

Despite its centrality in promoting scholarly output and the learning process, constructing the English language teacher's identity has received little attention (Teng, 2019), particularly in the Arab region (Abou-Assali, 2013). The present study explores the factors influencing EFL teachers' professional identity construction at UNRWA University in Jordan. The study attempts to shed light on the driving forces that shape and construct the professional identity of the English language, focusing on areas in which English is studied as a foreign language. It also addresses the ideational issues that enter into the making of such an identity, especially with the emergence of new socio-economic and cultural elements and trends that redefine the concept of identity and its existential formation, relations and extensions. Motivated by such entailing facts and the leading experience of UNRWA University in ELT, the present study examines how initial English language teachers at UNRWA University, Jordan, construct their identities and explores the factors that influence their identity construction. **UNRWA** University is one of Jordan's most important educational institutions that offers primary and secondary education to Palestinian refugee children. Therefore, constructing its initial teachers' identity is crucial to producing high-quality education. The construction of teachers' identity will be reflected in the knowledge and culture of the students and their contribution to the nation's building.

The significance of the study lies in its scrutinising of one of the most critical issues that affect teachers' identity construction and its impact on the education process. By addressing the influencing factors that construct a teacher's professional identity and self-image, the study ponders to the role of such identity in the productivity and performance of the learning process, including teachers and students.





The study is expected to contribute to the existing knowledge and studies already conducted in the education process and the construction of teachers' identities. It will also contribute to our understanding of the importance of a conducive professional environment in supporting teachers to develop their professional identities.

LITERATURE REVIEW

Professional identity is an identity in the context of a profession in which all members constitute an organised body, experiencing the same rights and actions, culture, and knowledge, and having a definite goal or set of goals to achieve (Parse, 1999). In light of this view, identity is the realisation of the two-sided self: personal and professional. This view assumes a combination of individual attributes, values, motives, beliefs, and experiences with those related to the profession (Weaver et al., 2011; Molinero, 2017).

Madill & Latchford (2005) viewed professional identity as a specific aspect. Ibarra (1999) opened new vistas to study the person's impact on professional identity and how professionals formed identities. The growing interest in personal identity and excavating its direct relevance to professional zones such as organisations and higher education has been echoed in several studies that attempted to examine the articulating elements, and nuances of such identity and its associated factors with degree switches, academic failure and dropout rates, and relevant costs. The stronger the personal identity, the lower the indicator (Smitina, 2010).

Adams et al. (2006) emphasised that an individual's professional identity is constructed from the early stage of childhood and continues to be formulated. Identity construction is always in the making. Through personal contact and interaction with typical members of their profession, individuals develop a sense of professional identity and acquire specific knowledge and abilities via a series of interpretations and reinterpretation, identifying themselves with the group behaviour by self-conceptionally adopting and internalising the norms and values that are usually associated with the group (Adams at al., 2006).

The concept of a teacher's professional identity has been presented in many different studies within the educational arena. They have been concerned with the way teachers perceive themselves as teachers or how they reveal their professional identity as actors of the teaching profession within a larger context of individual responsibility, how these personal roles are merged, and with what kind of personality character they should have (Beijaard, Meijer and Verloop, 2004).

Johnston's study (2012) has aptly traced the methodological implications of a teacher's identity in the classroom. Johnston examined the role of the teacher's identity as a tool for creating an identity self-image through the classroom. Professional expectations are brought in along with motivations, emotions, and core beliefs, ability to distinguish between bad or good models of teachers, which would enable prospective teachers to make perceptions and concepts on what makes a teacher.

Significant studies on the construction of a teacher's identity include Lamote and Engels (2010), Zare-ee and Ghasedi (2014), Tseng (2017), and Trent (2013). They underscored the





versatility of the teacher's identity due to the complexity of the experience and the dynamicity of the construction course. The course line of identity construction is discursively determined by the factors that enter into the making of the teacher's experience. According to Beauchamp and Thomas (2009), teachers' identities are changed when they are employed and are developed as they assume more duties, responsibilities, and commitments in their teaching profession.

The sociocultural intake of teachers' identity construction has been the focus of Schepens (2009), who argues that throughout their teaching experience, teachers draw an identity outline and that this interpretatively communicative sphere is liable to negation and intersecting elements of a working environment. The impact of a teacher's beliefs and values in constructing a teacher's identity must be considered as they govern how a teacher teaches, develops his profession, and addresses educational needs and changes (Beijaard et al., 2004). Every teacher has their way of teaching constructed by his values regarding education (Walkington, 2005).

Many scholars concluded that teachers develop their professional identity by learning over time and through interaction with others and with the environment through their engagement with students and colleagues, working situations, and target situation time experiences (Beijaard et al., 2004; Van Veen, Sleegers, & Van de Ven, 2005).

Previous studies such as Gu & Benson (2015)found that the interests of teachers in choosing to teach are affected by their families, past teachers, and their love to learn a foreign language; initial teachers chose teaching based on a series of beliefs shaped by sociocultural interaction, including interaction with their past teachers, parents, and their interest to learn a foreign language; they were cognizant of the role played by their families in addition to their inclination towards the profession of teaching.

Given the significant role of the teacher within the community of practice, the teacher's profession becomes more of a classroom activity in which identity is constructed according to the degree, density, and variety of participatory and interactional factors, i.e., members of a teacher community (Wenger, 1998;). This includes their relationships with their supervisors, colleagues, students and administration, interaction with parents, and engagement in classroom activities. They are considered crucial factors in which teachers understand how to adapt or create a new identity and recognise themselves as teachers.

Beliefs and knowledge contribute to shaping the professional identities of initial teachers; beliefs are considered a guide for their classroom goals. In addition, the culture and principles of learning and teaching have roles in teaching a foreign language (Gonazez, 2008). Tagarelli and Borges (2015) argued that knowing a foreign language requires learning a culture; living in a foreign language community enhances teaching and communication skills, and knowledge is a clear field of a language teacher's professional identity.

In this study, the teacher's professional identity refers specifically to the professional identity of initial teachers of English at UNRWA University in Jordan. They are individual EFL teachers who are not native speakers of English.





THEORETICAL FRAMEWORK

Wenger's Social Theory of Learning: Foregrounding Identity

Wenger's (1998) social theory of learning was built on his preliminary work Wenger (1998), where he emphasises learning as contextually defined and formulated in particular social and physical settings and proliferated across the individual, other agents, and tools within 'communities of practice'. The concept of 'Communities of Practice' is utilised as a perspective tool for evaluating and assessing the process of 'knowing and learning'. Wenger (1998) describes communities of practice as congregations of individuals who have a common interest in a particular job and learn how to improve their performance in that job as they interact regularly. Wenger (1998) delineates three crucial characteristics of communities of practice. These include:

- I. **Domain:** community members belong to a community of practice with a common identity determined by a shared field of interest. Membership entails a commitment to the environment and a shared competence that sets members apart.
- II. **The community**: members or individuals of the domain are involved in several activities, events, or actions, sharing information for the interest of all and each domain member.
- III. **Practice:** community members are active participants and practitioners.

These central characteristics have a standard range of intakes such as experiences, accounts, tools, and ways of dealing with common issues and problems. In other words, it is a matter of shared knowledge and practice. Such an approach is mainly employed in Higher Education literature.

Recent studies on teachers' professional identity construction outside the Arab world

The construction of a teacher's professional identity has been the focus of many studies. Lankveld et al. (2016) reviewed the factors that promote or constrain teachers' identity development. A qualitative synthesis of 59 studies was conducted. Out of the 59 reviewed studies, 57 applied qualitative methodology through focus group discussions or interviews, whereas most studies focused on the university teachers' academic life experiences. The review results showed that many factors develop a teacher's identity; for example, communication with students and staff development programs promotes a teacher's identity while the broader context of higher education constrains it. It has also been found that a teacher's identity is strengthened or denied under the effect of the natural work environment based on the degree of teaching evaluation in the department. Based on the study findings, five psychological processes influencing the development of teacher identity have been observed: a sense of esteem or appreciation, a sense of efficacy, a sense of connectedness, a sense of commitment, and creating a future essential for the empowerment of university teachers and that staff development activities support teachers to create ways for building confidence and controlling their work situation.

Some studies attempted to explore the role of the student-teacher relationship in constructing a teacher's identity from a sociocultural perspective. This includes the analysis from Chile by





Ayala (2018). Adopting a qualitative research approach, the study utilised a case study method to examine the living learning experience of two EFL female student teachers enrolled in an undergraduate program in Viña del Mar, Chile. Personal narratives, semi-structured interviews, and a focus group were the used data gathering instruments. Findings revealed that the construction of student-teacher professional identity is a dynamic and unstable process and that interconnected personal and external factors, including self-reflection, learning situation and target environment, and related experiences, are the major constructing factors.

On the same plane of thought, Alberto (2011) studied the effect of professional social culture on teachers' professional identity construction. The study explores how teachers construct their professional identity through training to be a teacher in connection with three elements, including being a part of the teacher community, the relationship between the knowledge system and beliefs, and class practice and professional expectations for the future. Participants of the research were a group of six Colombian prospective teachers. The research methodology was a case study in which a qualitative case study was conducted; data was gathered through interviews, stimulated recall, and online blogs. The study findings showed that although learning to teach is an individual process built and exercised independently, it is no matter negotiated socially. As a result, the identity of the teacher, the study concluded, is not the only the result of a solely personally constructed knowledge and action. His identity incorporates castings drawn beyond personal and interpersonal ingredients, such as factors associated with cultural elements, religious tenets, political beliefs, and ideological interests and conditions encompassing the teachers' life and work. The participants demonstrated constant resistance as they sought to develop their professional style and to manage the existing limitations levied by a society which has already identified what teachers should do.

In a study on EFL initial teachers' development of the teaching profession's identity, Teng (2019) aimed to offer a comprehensive view of teacher independence, agency, and identity demonstrated by EFL initial teachers. Using a qualitative approach, the study explored how four initial teachers assume their teaching, conduct argentic behaviour, and negotiate identity in a Chinese EFL context. Participants' practicum reports, interviews, lesson plans, and school documents were the primary data collection tools. Study findings showed that EFL initial teachers faced difficulties exhibited by the evaluation mechanisms, school curriculum, and social context. These factors become social constraints influencing teachers' capabilities to bridge the gap between natural and ideal settings and leading to modifications and innovations in teaching. Besides, the institutional, physical, and social settings are seen as influencing forces that impact their identity construction. The study also concluded that teachers are keen to develop varying trajectories related to their autonomy, agency, and identity during teaching practicum.

Recent studies on teachers' professional identity construction in the context of the Arab world

Few studies have been found on the construction of a teacher's professional identity in the Arab world, among which is a survey conducted by Moshri (2018) on the relational effect of the teacher's ethical commitment to his teaching profession on his professional identity. Based on





Erickson's work on identity crisis and Marica's presentation on the concept of commitment to professional roles, values, and principles, Moshri aims to study the underlying effect of this relationship from a psychological perspective. The study findings stated that the professional identity is constructed through healthy psychological growth during stages of development and that the achievement of the teacher's professional identity and his commitment to the profession's ethics are two sides of the same coin.

Another study was conducted by Hussain (2017). Through personal interviews with 20 teachers, the study attempted to determine teacher professional identity perceptions of mathematics teachers in the primary stage. The study concluded that the levels of teachers' professional identity are usually high, and no differences can be found in the professional identity levels of the research sample that can be attributed to the number of professional development programs they obtained years of experience or gender. The research recommended that it is essential to raise the awareness of mathematics teachers in the primary stage of the teacher's professional identity and to develop their professional identity levels before and during service.

Another study is Al-Rashidi (2015) and Al-Fadley, Al-Holy and Al-Adwani (2018), which was conducted to identify the extent of awareness of primary school teachers in Kuwait, and the identity of the teacher's role as a standard for measuring the professional identity of the teacher. In addition, it aimed at exploring the impact of each educational professional qualification program and years of teaching experience in constructing this awareness. The identity of the teacher's role was measured through three main axes: (1) teaching and the student's needs, (2) work and school relations, and (3) personal and professional development. The study revealed that primary school teachers in Kuwait are aware of the teacher's roles in teaching, students' needs, work and school relations, and personal and professional development. Moreover, the study revealed that there is a significant effect of the educational professional professional professional professional professional professional professional professional professional development. Moreover, the study revealed that there is a significant effect of the educational professional professiona

RESEARCH METHODOLOGY

The present study adopted a qualitative research design to examine what self-image and identity were conceived by a group of EFL initial teachers at UNRWA University in Jordan and which factors were more influential and had an overall impact on constructing their professional identity. To answer these questions, a qualitative case study method was utilised in the study to collect and analyse the data. Classroom observation and in-depth semi-structured interviews with six Palestinian and FESA Jordanian participating teachers were the study sources and instruments for gathering the data. A qualitative approach was chosen to evaluate the constructive patterns and factors of EFL initial teachers' professional identity. This is because the focus was more on the construction process rather than the output.





Participants

This study involved six EFL initial teachers in the Faculty of Educational Science and Arts at UNRWA University in Amman, Jordan. The six EFL initial teacher participants were those with the first teaching experience and were selected using the purposive sampling technique. They were fresh lecturers with experience of less than three years. They were either Jordanian citizens of Palestine origin.

Procedures

The participants were first selected and informed about the aim and objectives of the study. Data was then collected using two stages of qualitative data gathering: direct observation and semi-structured interviews with the participants. Interviews were conducted to obtain data for evaluating the participants' inner feelings, thoughts, and values; observations were used to determine how such factors insinuate the teachers' professional identity as EFL initially teachers. Conducting both interviews and observations was informed by the rationale that the exclusive use of either of these two methods would be insufficient as a basis for coming out with reliable answers to the study questions. A sequence of events was followed during the gathering of data. The researcher asked the participants about their past and present experiences. These measures are essential for designing case study research; data were collected by gathering stories, exploring the experiences of individuals, and discussing what these experiences mean for the individuals (Creswell, 2012).

Semi-structured interviews

During the interview sessions, the participants were asked about their views of themselves as teachers, the factors that contributed to such an identity, and what professional attitudes they have acquired during their teaching profession (i.e. image information). To ensure the efficiency and practicality of this study, in line with the guidelines proposed by Gass and Mackey (2005), each individual participant was presented with a set of three separate interviews. The first interview focused on the participants' own experiences regarding learning English in the concerned study program. The participants were informed of the research guidelines. The participants were encouraged to be involved in lengthy discussions to consider implied thoughts. As they finished their responses, the participants were invited to add any further comments. The second interview was allocated to navigating their experiences of being trained in the teaching profession and what spell of self-perception such an experience would cast on their professional identity as teachers. The third interview was dedicated to exploring the factors affecting the process of being an EFL teacher. Two specialised experts approved the interview questions, and all interviews were conducted, recorded, and transcribed with the participants' consent.

Personal Stories

As a narratively unique method, teachers were requested to write personal stories on their experiences and beliefs as English language teachers and how their professional identities were constructed. According to Farrell (2011), personal stories reflect teachers' roles and





perceptions. Combined with observation, these narrative stories serve as an effective data collection strategy that enables the researcher to contextualise the participant's experiences to come up with a clear understanding of the produced setting (Hatch, 2002).

Observation

Participants' involvement was the main target of the observation phase of data collection. Both their participation inside the classroom and interactional behavioural conduct outside the classroom were the investigated areas of the observation phase as it can reveal a lot about the complex reality of teachers' lives and work and the constructing elements of a teacher's professional identity within and without the learning setting. As proponents of the interpretative approach argue, the meaningful reality is contextually constructed; that is, it is situated in a social location and shaped by human agents involved in reciprocal interactions between dyads and groups; illustrates the whole picture; captures the context/ process; and informs about the influence of the physical environment" (Mulhall, 2003, p. 307).

Since the main focus of this study is investigating how initial EFL teachers build and develop their own identities, the foci of observation are cognitive and interactional characteristics such as learning experiences, interaction with various social factors, and different emotional experiences and feelings. The inclusion of the observation instrument was determined by the fact that more than interview-based data collection would be required to provide a full-fledged and clear image of the implications for the participants' practice in an actual classroom setting. According to Morrison (1993), observations enable a researcher to collect data on "physical settings, human settings, interactional settings, and programme settings" (p. 80). Moreover, employing the dual method of interview and observation of data generated in this study helped to have in-depth information about teachers' identities forming the strength of the "triangulation" methodology (Perry, 2011).

Triangulation has its rewards as it enhances the study's accuracy, ensures its completeness, and strengthens the authenticity and reliability of the research findings.

Observation methods involved active observation and recording the behaviour or action of the research participants about their immediate social and physical context (Morgan et al., 2016). The first stage included the participant observational procedure. Data was collected at this stage by actively observing the participants during their lectures in EFL classes. Based on the educational context, a list of identity sheets was devised. The list reflected researchers' personal and professional experiences of their conceptualizations of themselves. This gave us a preliminary understanding of the participants' views of professional identity. These experiences enabled us to comprehend teachers' cognitions, feelings, and emotions based on changes in their professional identity that were motivated by contextual factors. In line with the second procedure that probed the etymological roots, the sources of social constructs, professional identity, and cultural resources were also examined to enrich researchers' knowledge.





Data analysis procedure

Data analysis in this study was carried out concurrently with data collection, as Merriam (2009) suggested that reflection of data collection was the key process at all stages of analysis. The data collected through observation and interviews were analysed based on thematic analysis. Braun and Clarke's (2006) identified six stages of the thematic analysis approach, including data familiarity, progress in the primary sequences, looking for similar/contrasting themes between the data, review and investigation of themes, describing the names of articles, and progress in the final report. Issues about the EFL teacher identity, such as profession, age, initial teacher relation, and cultural background, were considered when forming the themes and codes.

Findings

Various factors affecting the EFL teachers' identity construction at UNRWA University in Jordan have been identified in this study. The findings are presented and discussed thematically below.

Theme 1: Role of families and past teachers

Excerpt 1

Rami: My uncle is an English language teacher who inspired me to study English. He has many foreign English friends in England, the U.S.A and India. In addition, he gains a good income from his profession as an English teacher and translator. He takes care of his students and is very loyal to his profession. He spares no effort in providing me with guidance and principles of target language teaching.

As shown in Excerpt 1, Rami as an English language teacher, commented on his decision to be a language teacher. Motivated by his uncle, in one way or another, to pursue his studies in English teaching, Rami considered teaching a financially rewarding profession which can also provide him with the opportunity to meet and interact with people from different regions all over the world. In other words, his family's past was a good reason for Rami's being an English language teacher. Besides finding it financially, rewarding, Rami's uncle also furnished him with teaching guidance and principles related to target language teaching and learning. It is concluded that affiliation with the teaching profession begins relatively early after identification with their families.

Participants in other studies also mentioned that they were cognizant of the role played by their families in addition to their inclination towards the profession of teaching (see Norton, 2013; Pavlinko, 2003). During this period, initial teachers constructed imagined identities.

Excerpt 2

Interviewer: Can you please tell us if you have any particular memory regarding the past teachers who motivated you to decide to become an English teacher?

Rami: Yes, in middle school, my English teachers were extraordinary teachers who made me prefer English subjects.





I loved the way they adapted to teach us; they used to bring us videos and songs.

Rami's teachers motivated him to become an English language teacher. Johnson (1999) and Danielewicz (2001) stated that teachers are considered models, either to be imitated or surpassed; their behaviours, practices, teaching methods, communication with students, and knowledge impact the construction of novice teachers' identity either positively or negatively. Model teachers inspire student teachers through their ways of teaching, good relationships with students and job commitment.

It can be concluded that past teachers have had a significant impact, and their roles are remarkably formulated in constructing teachers' professional identities. As the study findings revealed, past teachers played an important role in the participants' decision to choose teaching as a profession. These current findings concord with previous literature on teacher's education which proposed that students choose teaching based on their interaction and experiences as learners that make them familiar with teaching (e.g., Malderez et al., 2007).

Theme 2: Practicum experiences

Excerpt 3

Jamila: When I met my supervisor for the first time, I was thrilled and cried out of joy because he praised and encouraged me. I was thrilled because I did my assignment successfully.

Based on her comments, Jamila's supervisor encouraged her to build her self-image as a teacher. She was also satisfied with her students' reactions, who showed good interaction with her classes. This helped her to develop her ways and style of teaching. The relationship with mentors and the training context were critical factors in constructing professional identity (Yuan, 2016; Flores and Day, 2006).

During the practicum period, the initial teachers were actively involved in the interpersonal process, negotiating their understanding of who they are, what image they perceive of their selves as being teachers, how they behave as teaching personnel, and what position they may secure as professionals of teaching within their communities (Sachs, 2005). In their teaching practice, initial teachers began to impart their imaginary perceptions of their would-be roles and identities to professional roles as teachers in actual situations, affirming their identity of practice through their interactional engagement within natural communities of practice. Moreover, the findings support the argument that power relations between advisors and initial teachers are significant in developing the professional identity (Yuan, 2015; Mukeredz, 2016).

Excerpt 4

Khalid: For me, I did not learn from training. It was an open program. My mentor was busy with other assignments and needed to pay attention to or support me. He did not give me professional guidance. The actual training started when I was appointed officially as a teacher.





Khalid was unsatisfied with the practicum and described it as a program for nothing and a waste of time. He showed his disappointing and frustrating experience that he did not receive any support or attention from his supervisor. He said his mentor wanted to finish the program quickly as he was busy with other tasks.

For Khalid and some other participants, the practice was a bad experience. At the same time, they showed a strong interest in teaching, but their interest declined due to their mentor's feedback and frustration. Such findings underscore that identity construction is never a single-edge experience of inward inclination and personal perception or outward influences but an amalgamation of both. Although Khalid showed a strong desire to be a teacher, he revealed that he was disappointed by his mentor's negligence and involvement with others. This affects him and could create a negative image of the teacher's identity. However, his inclination proved to be a motive that was nourished later when he was officially appointed as a teacher. This concluding finding was per some past studies, such as Farrell (2011) and Brown (2005), who supported the argument that initial teachers' sense of frustration because of the supervisor's absence of guidance and communication may negatively affect their interest in teaching and then their professional identity.

Theme 3: Community membership

Participants' narratives revealed a strong effect of sociocultural factors in shaping teachers' professional identity. It has been observed that participants' identities were influenced by the type of interactions with and belonging to the collective identity of their particular community. From a sociocultural perspective, identity is defined as a collective phenomenon; a result of intentional and unintentional negotiation of meaning and image-making developed through a continuous and consistent interaction between individuals' personal experiences and the environment that includes values, beliefs and principles (Wenger, 1998; Miller, 2009).

The research revealed that initial English teachers with a strong sense of agency see themselves as committed enlighteners of their community. Within a community, membership identity is constructed through engagement and contribution to the practices of these communities (Wenger 1998, Miller 2009).

Excerpt 5

Rami: At the beginning, I was disappointed as the new teaching environment did not match my expectations. The University environment is different from that in schools. My colleagues were kind and supported me a lot.

Excerpt 6

Jamila: My colleagues were very kind; we always sat together, discussed educational matters, and helped each other; our relationships were lovely.

As we notice from Rami and Jamila's interviews, becoming a part of a university community needs support from colleagues; through interaction and communication, they asserted that their relationships with their colleagues were excellent and that it were related to the professional environment, which contributed to the construction of their professional identity. This





demonstrates that communities of practice have a significant impact on constructing a teacher's professional identity. As shown in Rami's and Jamila's responses, active participation and communication with members of the teacher community had a significant role in promoting their interest in teaching and enhancing their self-image as teachers within teaching communities (Wenger, 1998; Handley et al., 2006). The findings also revealed that the initial teachers have succeeded in the negotiation process of meaning-making of their experiences. Their conception of themselves as community members is nourished through interactional involvement and active participation in different activities within the professional community. In other words, initial teachers utilised their communication and contact with their colleagues through mutually reciprocal sharing of experiences to create a sense of community membership and belonging to their communities.

Theme 4: Teaching perceptions, knowledge and beliefs

Becoming a teacher is reflected in a system of basic principles of knowledge and belief. It is related to teachers' perceptions of teaching as a profession in a broader sense and to their roles (mission) in a more restricted sense.

Excerpt 7

Hassan: I use a different way of teaching. My teaching methods are broader than the local context of my counter. I inspired some beneficial cultures from other nations to give my students information on other nations' cultures and customs. I have to be close to the students. I tell my students stories and make them laugh to motivate them to love foreign languages. I love my students so much; I do not want to be just a teacher who provides knowledge only because you can get knowledge from everywhere, but where are the skilled teachers?

When Hassan finished the practicum and had experience regarding the role of teachers, he strengthened his beliefs about the role and responsibilities of teachers in building a good relationship with his students. He talked about his way of teaching and criticised other teachers; this reflects his awareness of his role as a teaching professional and committed individual within his community and what he wants to use in his teaching.

For Hassan, the teacher should be open-minded; he is careful about his students, providing interpersonal support to his students. His teaching philosophy goes beyond pedagogical duties. He is aware of the meaning of becoming a teacher. Knowledge and beliefs of teachers are considered a fundamental pillar in becoming a teacher and then of identity construction (Borg, 2003).

Excerpt 8

Oras: I was given a reasonable opportunity when I travelled abroad and met people from different cultures. As a teacher of the English language, I learnt many things and reinforced my knowledge. It was an opportunity to practice the English language in different places. I had the chance to speak with native speakers and people from other cultures.





Oras revealed that it is essential to be in communication with the target language culture. She believed that direct contact and experience in an environment where a foreign language is used helped improve her communicative competence and, as a result, her teaching skills and methods. She also explained that she could interact with multicultural communities, which enabled her to communicate with native speakers from various countries.

The findings are consistent with those of past studies that stated that beliefs and knowledge contribute immensely to shaping the professional identities of initial teachers; beliefs are considered a guide for their classroom goals. In addition, culture and principles of learning and teaching play a significant role in the way of teaching and identity of a foreign language teacher (Lucas, Villegas & Freedson-Gonzalez, (2008); Blay & Ireson, 2009). Borges (2006) argued that knowing a foreign language requires learning its culture; living in a foreign language community enhances teaching and communication skills. Knowledge is a clear field of a language teacher's professional identity.

DISCUSSION

It has been expounded in this study that teacher community, practicum, beliefs and knowledge, family and past teachers, and community members are formulating factors that contribute to a teacher's professional identity construction. A teacher's professional identity is based on the relationships the teacher builds inside and outside the teaching community and his participation in the teaching community, including choosing, teaching, and engagement (Clarke, 2013; Wenger, 1999). The initial EFL teachers' the construction or reconstruction of their new identities is affected by their involvement in real-world experiences as teachers. This identity is constructed according to the degree and type of participation in a teacher community.

Family roles and the role of past teachers have a significant direct impact on developing their teaching performance and competence as well as motivation and interest as teaching professionals. The development of their teaching interests and skills emerges out of their inspiration and guidance provided by family roles, past learning experiences, professional knowledge, and engagement in the teaching community.

The study reveals that teachers saw themselves as part of a new community or a generation of teachers, experiences and classroom experiences. Such findings match similar studies (e.g., Malderez et al., 2007; Roberts & Graham, (2008). Beliefs and knowledge are considered guidelines that help teachers to achieve their classroom goals.

The construction of professional identity in this study is considered a sequence of processes which passed through different stages the participants experienced before and after engaging in the teaching profession. The impact of the practicum on the construction of teachers' professional identities was obvious. Data showed that the past personal experiences of the participants influenced their perceptions of themselves and their professional identity through their interaction and identification with others. For example, the good or bad impression of initial teachers about their past teachers influences their perception of teaching and the way they construct their identity; their moral values towards the profession also contribute to





shaping their understanding of themselves as teachers; their interaction and observations of their family's members who were teachers affect the construction of their identity (Clarke, 2013).

In brief, the images of identity drawn by initial English teachers do not mean that they understand the role of teachers but also the visions they drew from their professional selves.

A significant role was also played by communities of practice in constructing a teacher's professional identity through participation and interaction with members of the teacher community. This includes their relationships with their supervisors, colleagues, students and administration, interaction with parents, and engagement in classroom activities. They are considered crucial factors in which teachers understand how to adapt or create new identities and recognise themselves as teachers. All participants acknowledged that they received support from their colleagues that contributed to developing their experiences, although they faced some challenges.

The findings reveal that initial teachers construct their identities through negation and experience-sharing processes within the community of practice. They established their self-image in light of their belonging and participation in the community environment, identifying themselves as active community members. For example, one participant (see excerpt 6) commented that he and his colleagues were sitting together and sharing experiences and views that the teaching community allowed him to develop a sense of affiliation to the teaching community. However, although the initial teachers share the same profession and experiences with their colleagues, each participant has a different way of negotiating the joint profession. In the cases of Jamila, Hassan, Sami, and Khalid (see excerpts 3,4, 5, and 6), they tend to maintain their identities and develop a sense of agency and professional identity through the joint enterprise. The findings show that there is no doubt that collegial support is significant for initial teachers. Participants explained that, based on the support and relationships with their colleagues, they could understand and enhance the sense of belonging to a new environment.

Moreover, participants explained that they were recognised by others, resulting in an understanding of themselves. In addition, initial teachers were able to develop their identity through interaction in professional settings and how they viewed their positions within those communities (Morrison, 2013). Moreover, as self-positioning is essential in understanding identity, being recognized as teachers by others inside and outside the University was significant in forming initial teachers' identities. Recognition of others positively affects the construction of teachers' professional identities, and initial teachers' sense of efficacy is enhanced when colleagues with more teaching experience appreciate the work of initial teachers (Day et al., 2006). Such a positive impact made the initial teachers happy and feel proud to belong to the community of practice.

Findings reveal that the role of supervisors is highly significant and touchingly impressive on the part of teachers' identity construction. Supervisors' lack of guidance and mentoring can affect the learner-teacher professional identity (see excerpt 4). This finding confirms past research such as Farell (2005) and Malerelz et al. (2007).





It has also been found that initial teachers' professional identities are constructed through interaction with others in various contexts. Past experiences constitute a primaeval pattern of affiliation to teaching and participation. The interests of teachers in choosing to teach are affected by their families, past teachers, and their love to learn foreign languages. These findings conform to previous studies (e.g., Clarke, 2008). During the preteaching period, the participants developed imagined identities of being inspiring teachers through their early identification with their past teachers and families.

During the practicum, the initial teachers conducted themselves as teachers rather than students. Therefore, their imagined identities were being transformed into practical ones. The study reveals that teaching experiences greatly impacted professional expectations for the future. This is reflected in their wish to develop their skills and methods of teaching (see excerpt 3). The finding supports the argument that the practicum encourages initial teachers to identify with the teaching profession and develop their professional identities (Danielewicz, 2001; Le Huu Nghia and Ngoc Tai, 2017). These findings are in line with other studies (e.g., Beijaard, 1995; Hargreaves, 1998; Nieto 2003; Yost, 2006). However, teaching experience may have a negative effect on some teachers. This is very clear in the case of Khalid (see Excerpt 4), who was so motivated to teach before the practicum, but he did not receive support from his supervisors.

Pre-service and in-service are considered significant constructing time- periods in teachers' identity formation. It is found to be a chance to improve teachers' values. It is essential for strengthening and developing the quality of education and the task of education teachers who are involved in the production of such quality (Hargreaves, 1998. These findings support the argument that power relations between advisors and initial teachers are significant in developing the professional identity (see participants in Excerpts 3, 5, and 4). Accordingly, support received from mentors and feedback is highly stressed as significant for initial teachers to teach depending on their previous conceptualisations before their actual engagement in teaching.

There is a remarkable mutual and interlaced connection between initial teachers' identity development and their altered classroom practice. It has been found that classroom activities cause teachers to strengthen their identities. These findings are consistent with the proposition of Kaya and Dikilitaş (2019) that classroom practice has a significant role in developing the identity of a behaviourist to socio-constructivist, where professional development was important in programs related to language.

Beliefs and knowledge greatly shape the professional identity of initial teachers (see Excerpts 7 and 8). The study findings confirm the assumption that perceptions of the role of culture affect the teaching of a foreign language and principles of learning and teaching. Data shows that participants' beliefs were seen as guidance for their classroom goals. This finding is compatible with the previous studies proposed by Gonzalez (2008), Da Silva (2005), Blay, Ireson (2009), and Borges (2005).





CONCLUSION

Teachers' professional identity construction in this study was conceived as sequences of processes which passed through different stages the participants experienced before and after engaging in the teaching profession. Community of practice, practicum, beliefs and knowledge, family and past teachers and work environment are the top influencing factors contributing to the construction of EFL teachers' professional identity.

The findings of this research are expected to contribute to the existing knowledge and research already conducted in the education process and the construction of teachers' identities. Besides, these findings offer a founding platform for EFL learning and planning institutions to consider for their future instructional code and design. They also serve as pedagogically experimental conclusions for initial EFL teachers and instructors to enhance their productivity, performance, and competence. Findings and conclusions presented in this work have been dealt with as recommendations that can be pedagogically and institutionally conducive for both EFL teachers and educationalists, and syllabus designers. They offer solutions to the problem of the study by tackling the pivotal element in the EFL teaching process, which is the teacher's identity construction and its impact on the education process and productivity at the University.

Conflict of Interest Statement:

The authors declare there is no conflict of interest.

Data Availability Statement:

Data is available upon request.

References

- 1. Abednia, A. (2012). Teachers' professional identity: Contributions of a critical EFL teacher education course in Iran. Teaching and teacher education, 28(5), 706–717. doi:10.1016/j.tate.2012.02.005
- 2. Abou-Assali, M. (2013). The emotional experiences of United Arab Emirates EFL student teachers during the practicum. Retrieved from: https://ore.exeter.ac.uk/repository/handle/10871/14926?show=full
- Adams, K., Hean, S., Sturgis, P., & Clark, J. M. (2006). Investigating the factors influencing professional identity of first-year health and social care students. Learning in Health and Social Care, 5(2), 55-68.doi: 10.1111/j.1473-6861.2006.00119.x
- 4. Al-Rashidi, M. (2015). Reforming physical education teacher preparation in Kuwaiti Higher education.
- 5. Alberto, J. (2011). Teacher identity construction: Exploring the nature of becoming a primary school language teacher (Doctoral dissertation). Newcastle University, Colombia.
- Al-Fadley, A., Al-Holy, A., & Al-Adwani, A. (2018). Teacher Perception of Parents' Involvement in Their Children's Literacy and Their Reading Instructions in Kuwait EFL Primary School Classrooms. International Journal of Education and Practice, 6(3), 120-133.
- 7. Bloomfield, D. (2010). Emotions and 'getting by': A pre-service teacher navigating professional experience. Asia-Pacific Journal of Teacher Education, 38(3), 221-234.
- 8. Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. Cambridge Journal of Education, 39(2), 175-189.doi:





10.1080/03057640902902252

- 9. Beijaard, D., Meijer, P. C., & Verloop, N. (2004). Reconsidering research on teachers' professional identity. Teaching and teacher education, 20(2), 107-128. doi: 10.1016/j.tate.2003.07.001
- 10. Beijaard, D. (1995). Teachers' prior experiences and actual perceptions of professional identity. Teachers and teaching, 1(2), 281-294.
- 11. Blay, J. A., & Ireson, J. (2009). Pedagogical beliefs, activity choice and structure, and adult–child interaction in nursery classrooms. Teaching and teacher education, 25(8), 1105-1116.
- Bloomfield, D. (2010). Emotions and 'getting by': A pre-service teacher navigating professional experience. Asia-Pacific Journal of Teacher Education, 38(3), 221–234. doi: 10.1080/1359866X.2010.494005
- 13. Borges, V. (2006). The incorporation of communicative language teaching into the elaboration of interactive software for ESL/EFL learning.
- 14. Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. Qualitative research in psychology, 3(2), 77–101.
- 15. Brown, M. E., Treviño, L. K., & Harrison, D. A. (2005). Ethical leadership: A social learning perspective for construct development and testing. Organizational behaviour and human decision processes, 97(2), 117-134.
- 16. Caza, B. B., & Creary, S. (2016). The construction of professional identity. In Perspectives on contemporary professional work (pp. 259-285). Edward Elgar Publishing.
- 17. Clarke, M., Hyde, A., & Drennan, J. (2013). Professional identity in higher education. The academic profession in Europe: New tasks and new challenges, 7-21.
- 18. Creswell, J. W. (2014). A concise introduction to mixed methods research. Sage Publications Inc.
- 19. Da Silva, M. (2005). Constructing the Teaching Process from Inside Out: How Pre-Service Teachers Make Sense of Their Perceptions of the Teaching of the Four Skills. TESL-EJ, 9(2), n2.
- 20. Danielewicz, J. (2001). Teaching selves: Identity, pedagogy, and teacher education. Suny Press.
- 21. Day, C., Kington, A., Stobart, G., & Sammons, P. (2006). The personal and professional selves of teachers: Stable and unstable identities. British educational research journal, 32(4), 601-616.
- 22. Farrell, T. S. (2011). Exploring the professional role identities of experienced ESL teachers through reflective practice. System, 39(1), 54-62.doi:10.1016/j.system.2011.01.012
- 23. Flores, M. A., & Day, C. (2006). Contexts which shape and reshape new teachers' identities: A multiperspective study. Teaching and teacher education, 22(2), 219-232.
- 24. Gass, S., Mackey, A., & Ross-Feldman, L. (2005). Task-based interactions in classroom
- 25. Gonzalez, R., & Ayala-Alcantar, C. U. (2008). Critical caring: Dispelling Latino stereotypes among preservice teachers. Journal of Latinos and Education, 7(2), 129-143.
- 26. Gu, M., & Benson, P. (2015). The formation of English teacher identities: A cross-cultural investigation. Language Teaching Research, 19(2), 187-206.
- 27. Handley, K., Sturdy, A., Fincham, R., & Clark, T. (2006). Within and beyond communities of practice: Making sense of learning through participation, identity and practice. Journal of management studies, 43(3), 641-653.
- 28. Hargreaves, A. (1998). The emotional practice of teaching. Teaching and teacher education.





- 29. Harré, R., & Van Langenhove, L. (1999). Positioning theory (pp. 32-52). Blackwell: Oxford.
- 30. Hatch, J. A. (2002). Doing qualitative research in education settings. Suny Press.
- 31. Hogg, M. A., & Reid, S. A. (2006). Social identity, self-categorization, and the communication of group norms. Communication theory, 16(1), 7-30.doi: 10.1111/j.1468-2885.2006.00003.x
- 32. Hussain, S. Y. B. S., Hoe, T. W., & Idris, M. Z. B. (2017, May). Digital game based learning: A new method in teaching and learning mathematics. In AIP conference proceedings (Vol. 1847, No. 1, p. 030016). AIP Publishing LLC.
- 33. Ibarra, H. (1999). Provisional selves: Experimenting with image and identity in professional adaptation. Administrative science quarterly, 44(4), 764-791.
- 34. Johnson, M. (1999). CALL and teacher education: Issues in course design. CALL-EJ Online, 1(2), 4-2.
- 35. Johnston, J. L. (2012). Using identity as a tool for investigation: A methodological option in the researcher's toolbox. International Journal of Arts & Sciences, 5(5), 1-9.
- 36. Kaya, M. H., & Dikilitaş, K. (2019). Constructing, reconstructing and developing teacher identity in supportive contexts. Asian EFL Journal, 21(1), 58-83.
- 37. Lamote, C., & Engels, N. (2010). The development of student teachers' professional identity. European journal of teacher education, 33(1), 3-18.doi: 10.1080/02619760903457735
- Lankveld.T.V, Schoonenboom. J, Volman.M, Croiset, G. & Beishuizen.J, 2016, developing a teacher identity in the university context: a systematic review of the literature. Higher Education Research & Development, 36(2), 325-342. doi:10.1080/07294360.2016.1208154
- Lucas, T., Villegas, A. M., & Freedson-Gonzalez, M. (2008). Linguistically responsive teacher education: Preparing classroom teachers to teach English language learners. Journal of teacher education, 59(4), 361-373.
- 40. Madill, A., & Latchford, G. (2005). Identity change and the human dissection experience over the first year of medical training. Social Science & Medicine, 60(7), 1637-1647.
- 41. Malderez, A., Hobson, A. J., Tracey, L., & Kerr, K. (2007). Becoming a student teacher: Core features of the experience. European journal of teacher education, 30(3), 225-248.
- 42. Merriam, P. A., Tellez, T. L., Rosal, M. C., Olendzki, B. C., Ma, Y., Pagoto, S. L., & Ockene, I. S. (2009). Methodology of a diabetes prevention translational research project utilizing a community-academic partnership for implementation in an underserved Latino community. BMC medical research methodology, 9(1), 1-9.
- 43. Miller, J. (2009). Teacher identity. The Cambridge guide to second language teacher education, 4(1), 172-181.
- Morgan, P. L., Hammer, C. S., Farkas, G., Hillemeier, M. M., Maczuga, S., Cook, M., & Morano, S. (2016). Who receives speech/language services by 5 years of age in the United States?. American Journal of Speech-Language Pathology, 25(2), 183-199.
- 45. Morrison, E. W. (1993). Longitudinal study of the effects of information seeking on newcomer socialization. Journal of applied psychology, 78(2), 173.
- 46. Morrison, J. A. (2013). Exploring exemplary elementary teachers' conceptions and implementation of inquiry science. Journal of Science Teacher Education, 24(3), 573-588.
- 47. Moshri, Solaf. (2018). Teachers' Professional identity and its relationship with commitment to the ethics of the profession, Alwadi University, Algeria.





- 48. Mulhall, P., Berry, A., & Loughran, J. (2003, December). Frameworks for representing science teachers' pedagogical content knowledge. In Asia-Pacific forum on science learning and teaching (Vol. 4, No. 2, pp. 1-25). The Education University of Hong Kong, Department of Science and Environmental Studies.
- 49. Nghia, T. L. H., & Tai, H. N. (2017). Preservice teachers' identity development during the teaching internship. Australian Journal of Teacher Education (Online), 42(8), 1-15.
- 50. Nieto, S. (2003). What keeps teachers going?. Teachers College Press.
- 51. Norton, B. (2013). Identity and language learning. In Identity and Language Learning. Multilingual matters.
- 52. Pavlenko, A. (2003). 'Language of the enemy': Foreign language education and national identity. International Journal of Bilingual Education and Bilingualism, 6(5), 313-331.
- 53. Perry, N. E., & Rahim, A. (2011). Studying self-regulated learning in classrooms: university of British Columbia, Vancouver, Canada. In Handbook of self-regulation of learning and performance (pp. 136-150). Routledge.
- 54. Roberts, J., & Graham, S. (2008). Agency and conformity in school-based teacher training. Teaching and Teacher Education, 24(6), 1401-1412.
- 55. Sachs, J. (2005). Teacher education and the development of professional identity: Learning to be a teacher. In PM Denicolo & M. Kompf (eds.), Connecting policy and practice: Challenges for teaching and learning in schools and universities (pp. 5-21). New York: Routledge.
- 56. Salinas, D., & Ayala, M. (2018). EFL student-teachers' identity construction: A case study in Chile. HOW, 25(1), 33-49. https://doi.org/10.19183/how.25.1.380
- 57. Schein, V. E. (1978). Sex role stereotyping, ability and performance: prior research and new directionS 1. Personnel Psychology, 31(2), 259-268.
- 58. Schepens, A., Aelterman, A., & Vlerick, P. (2009). Student teachers' professional identity formation: between being born as a teacher and becoming one. Educational studies, 35(4), 361-378.
- Selvi, A. F., & Rudolph, N. (2017). Teachers and the negotiation of identity: Implications and challenges for second language teacher education. Native and Non-Native Teachers in English Language Classrooms, 2(1), 257-272.doi: 10.1515/9781501504143-013
- 60. Smitina, A. (2010). The link between vocational identity, study choice motivation and satisfaction with studies. Procedia-social and behavioral sciences, 5, 1140-1145.
- 61. Tagarelli, K. M., & Borges, M. (2015). 13 Working Memory, Learning Conditions and the Acquisition of L2 Syntax. Working memory in second language acquisition and processing, 87, and 224.
- 62. Teng, F. (2019). Understanding teacher autonomy, teacher agency, and teacher identity: Voices from four EFL student teachers. English Teaching & Learning, 43(2), 189-212.
- 63. Teng, F. (2019). Autonomy, agency, and identity in teaching and learning English as a foreign language. Singapore: Springer.
- 64. Trent, J. (2013). From learner to teacher: Practice, language, and identity in a teaching practicum. Asia-Pacific Journal of Teacher Education, 41(4), 426-440.doi: 10.1080/1359866X.2013.838621
- 65. Van Veen, K., Sleegers, P., & Van de Ven, P. H. (2005). One teacher's identity, emotions, and commitment to change: A case study into the cognitive–affective processes of a secondary school teacher in the context of reforms. Teaching and teacher education, 21(8), 917-934.
- 66. Walkington, J. (2005). Becoming a Teacher: Encouraging Development of Teacher Identity through Reflective Practice. Asia-Pacific Journal of Teacher Education, 33, 53-64. http://dx.doi.org/10.1080/1359866052000341124





- 67. Weaver, R., Peters, K., Koch, J., & Wilson, I. (2011). 'Part of the team': professional identity and social exclusivity in medical students. Medical education, 45(12), 1220-1229.
- 68. Wenger, E. (1998). Communities of practice: learning, meaning, and identity. New
- 69. Yost, D. S. (2006). Reflection and self-efficacy: Enhancing the retention of qualified teachers from a teacher education perspective. Teacher Education Quarterly, 33(4), 59-76.
- 70. Yuan, R. (2016). Understanding higher education-based teacher educators' identities in Hong Kong: A sociocultural linguistic perspective. Asia-Pacific Journal of Teacher Education, 44(4), 379-400.
- 71. Yuan, R., & Lee, I. (2015). The cognitive, social and emotional processes of teacher identity construction in a pre-service teacher education programme. Research Papers in Education, 30(4), 469-491.
- 72. Zare-ee, A., & Ghasedi, F. (2014). Professional identity construction issues in becoming an English teacher. Procedia-Social and Behavioral Sciences, 98, 1991-1995.doi: 10.1016/j.sbspro.2014.03.633

